Compact Disc Recorder

CDR795/00/17

CDR796/00S

Service
Service
Service

Service Manual

SERVICING

For servicing CDR79x the set has to be divided into two parts:

1. Except for the CD-R/W module all workshops can repair the set on component level.
The Switched Mode Power Supply unit will be exchanged completely in case of a failure.

2.The **CD-R/W module** can only be repaired on component level with the help of ComPair.
With this tool diagnosing of the set can be done in an interactive way. In this tool also the adjustment procedure has been implemented. The adjustment is absolutely necessary in case the CDR-Main Board and/or CD drive (CDR Loader) is disconnected from the matched production combination.
Only designated workshops can perform these repairs!
Please send the complete set to the designated workshop.

COMPACT disc DIGITAL AUDIO

COMPACT disc DIGITAL AUDIO Recordable ReWritable

MP3-CD PLAYBACK MP3

Available circuit descriptions: *The Basics of Compact Disc Recordable/Rewritable* 4822 725 25242
2nd line Service Manual CDR Mozart Module 3122 785 60030

TABLE OF CONTENTS

chapter
Technical Specification and Measurement setup................1-1, 1-2
Location of printed circuit boards..1-3
Warnings & Safety 2-1
Brief Operating Instructions ....3-1 to 3-3
Dismantling Instructions..4-1 to 4-8
Service hints ....5-1 to 5-5
Service Test Program ....5-7 to 5-9
BLOCK DIAGRAMS ....6-1 to 6-4
WIRING DIAGRAM...6-5

POWER BOARD (for orientation only) 7-1

DISPLAY BOARD...7-2 to 7-4

KEY BOARD..7-5
LIGHTGUIDE BOARD 7-5

INTERFACE BOARD...7-6 to 7-7

chapter
HEADPHONE BOARD 7-8

CD LOADER ....8-1 to 8-6

EXPLODED VIEWS
  apparatus..10-1
  CD loader...8-6

MECHANICAL PARTSLIST...10-2
ELECTRICAL PARTSLIST...10-3 ff

CLASS 1
LASER PRODUCT

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Published by MS 0217 Service Audio Printed in The Netherlands Subject to modification

GB 3103 785 25180

version 1.0

PHILIPS

TECHNICAL SPECIFICATION

General:

Mains voltage : 220V-240V / 50-60Hz for /00
100V-240V /50-60Hz for /01
120V / 60Hz for /17
Power consumption : ≤ 20W
≤ 0,6W in stand by

Input / Output:

Analog in:
input sensitivity : ≤250mV_{rms}
max. input voltage : 2,8V_{rms}
input impedance : 47kΩ

Analog out:
output level : 2V_{rms}±2dB
output impedance : 300Ω

Digital in (acc. IEC958):
input level : 0,5V_{pp}
input impedance : 75Ω

Digital out (acc. IEC958):
output level : 0,5V_{pp}
output impedance : 75Ω

Headphone:
output level : max. 5V_{rms} at 100kΩ
output impedance : 120Ω
frequency response: 20 - 20.000 Hz ±3dB (typ. ±2dB)
distortion : ≤ 0,01% at 1 kHz and -6dB output level at 120Ω
channel difference : ≤ 3dB at 1 kHz
channel crosstalk : -73dB at 1kHz (typ. -80dB)
signal/noise ratio : ≥ 95dB (A-weighted)

AUDIO PERFORMANCE

CD module: To be measured on ANALOG OUT socket.

frequency response : 20 - 20.000 Hz ±0,5dB
signal/noise ratio : ≥ 92dB (97dB A-weighted)
distortion : -90dB at 1 kHz (-95dB typ.)
channel difference : ≤ 0,3dB at 1 kHz
channel crosstalk : -95dB at 1kHz(-100dB typ.)
de emphasis : 0 or 15/50µs switched automatically by subcode on the disc

laser
output power : 500µW
wave length : 780 ±20nm

CD-RW module: To be measured on ANALOG OUT socket.

frequency response : 20 - 20.000 Hz ±0,5dB
signal/noise ratio : ≥ 86dB (89dB A-weighted)
distortion : -90dB at 1 kHz (-85dB recording)
channel difference : ≤ 0,3dB at 1 kHz (≤ 0,5dB recording)
channel crosstalk : -95dB at 1kHz (-89dB recording)
de emphasis : 0 or 15/50µs switched automatically by subcode on the disc

laser (laser class 3B)
output power : 1mW max. during reading
20mW max. during writing
wave length : 780 ±20nm

TECHNICAL SPECIFICATION

Remote Control: RC5 commands ***RC283105***

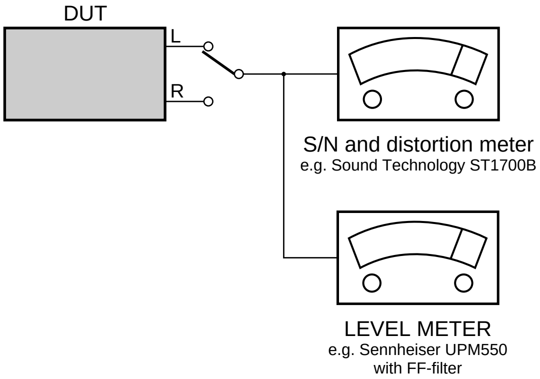
RC KEY	SYSTEM CODE		COMMAND CODE
	CD	CDR	
⏻ Standby	20	26	12
CD	20	20	63
TIMER REC	26	26	90
CDR	26	26	63
1	20	26	01
2	20	26	02
3	20	26	03
4	20	26	04
5	20	26	05
6	20	26	06
7	20	26	07
8	20	26	08
9	20	26	09
TRACK INCR.	26	26	114
0	20	26	00
PROGRAM	20	26	36
ALBUM -	20	26	CD 113 CDR 115
ALBUM +	20	26	112
▶ PLAY	20	26	53
⏮	20	26	33
⏭	20	26	32
■ STOP	20	26	54
◀◀	20	26	50
▶▶	20	26	52
❚❚ PAUSE	20	26	48
DISPLAY	20	26	11
DIM	16	26	71
CD TEXT/edit	20	26	CD 88 CDR 82
DELETE	20	26	49
SHUFFLE	20	26	28
REPEAT	20	26	29

RC5 code RC283105, 220402

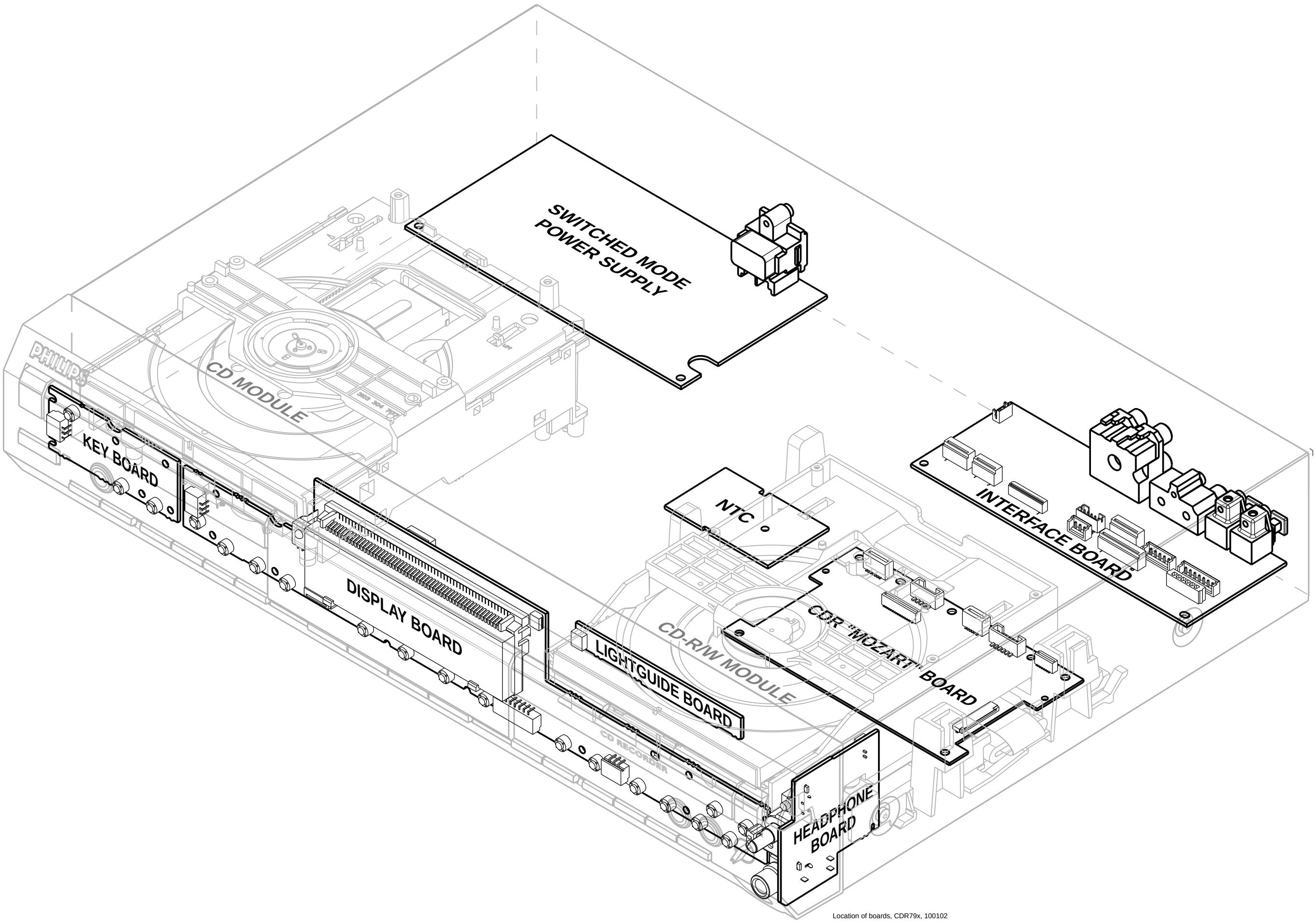
MEASUREMENT SETUP

CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

LOCATION OF PRINTED BOARDS


SWITCHED MODE
POWER SUPPLY
CD MODULE
PHILIPS
KEY BOARD
DISPLAY BOARD
NTC
INTERFACE BOARD
CDR "MOZART" BOARD
CD-RW MODULE
LIGHTGUIDE BOARD
HEADPHONE
BOARD
Location of boards, CDR79x, 100102

picture 1

WARNINGS & SAFETY

ESD

(GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

(F) ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB) AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
anti-static wristband	4822 395 10223
connection box (3 press stud connections, 1MΩ)	4822 320 11307
extendible cable (2m, 2MΩ, to connect wristband to connection box)	4822 320 11305
connecting cable (3m, 2MΩ, to connect table mat to connection box)	4822 320 11306
earth cable (1MΩ, to connect any product to mat or to connection box)	4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)	4822 310 10671
wristband tester	4822 344 13999

SAFETY

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(F)
Les normes de sécurité exigent que l`appareil soit remis à l`état d`origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkeliijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

(GB) **DANGER**: Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

CLASS 1
LASER PRODUCT

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

(FIN) Varoitus !

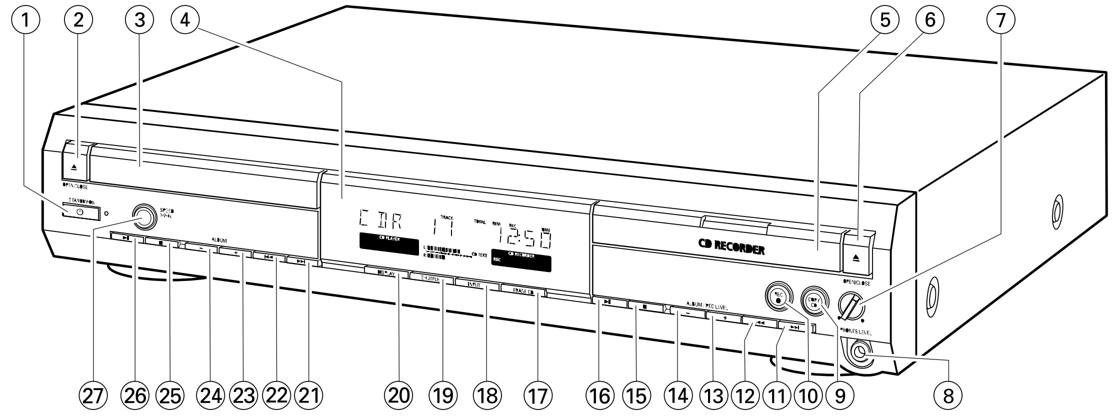
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

(GB)
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

(F)
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

The following excerpt of the Owner´s Manual serves as a very short introduction to the set.
The complete Owners Manual can be downloaded in several languages from the Internet site of
Philips Customer Care Center: **www.p4c.philips.com**

Controls



① ⏻ **STANDBY·ON**
switches the unit on/to standby

② ▲ **OPEN/CLOSE**
opens/closes the CD player drawer

③ CD player drawer

④ display

⑤ **CD RECORDER**
CD recorder drawer
blue light on: CD recorder is selected
red light on: recording in progress

⑥ ▲ **OPEN/CLOSE**
opens/closes the CD recorder drawer

⑦ **PHONES/LEVEL**
adjusts the headphone volume

⑧ **PHONES/LEVEL**
6.3 mm headphone jack

⑨ **COPY CD**
selects recording and automatic finalizing of current CD

⑩ **REC ●**
selects other recording modes

⑪ **►►I**
CD recorder: selects the next track, searches forward

⑫ **I◄◄**
CD recorder: selects the previous track, searches backward

⑬ **ALBUM/REC LEVEL**+
CD recorder: selects the next album on an MP3-CD,
increases the recording level

⑭ **ALBUM/REC LEVEL**–
CD recorder: selects the previous album on an MP3-CD,
decreases the recording level

⑮ **■**
CD recorder: stops playback/recording

⑯ **▶II**
CD recorder: starts/interrupts playback

⑰ **ERASE CD**
erases recordings on a CDRW

⑱ **INPUT**
selects the input for an external appliance

⑲ **SHUFFLE**
plays tracks in random order

⑳ **DISPLAY**
selects display information

㉑ **►►I**
CD player: selects the next track, searches forward

㉒ **I◄◄**
CD player: selects the previous track, searches backward

㉓ **ALBUM**+
CD player: selects the next album on an MP3-CD

㉔ **ALBUM**–
CD player: selects the previous album on an MP3-CD

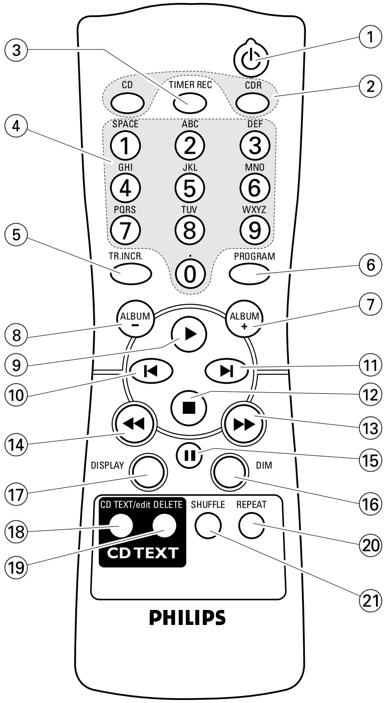
㉕ **■**
CD player: stops playback

㉖ **▶II**
CD player: starts/interrupts playback

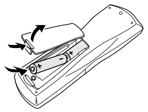
㉗ **SPEED 1·2·4x**
selects the record speed for internal recording

Note: SPEED 1·2·4x, REC *and* COPY CD *will be illuminated depending on the different modes you are in. This in order to facilitate finding the relevant keys for selection.*

Remote control



Remote control usage



Open the battery compartment of the remote control and insert 2 alkaline batteries, type **AA** (R06, UM-3).

Do not use old and new or different types of batteries in combination.

Remove batteries if they are dead or if the remote control will not be used for a long time.

Batteries contain chemical substances, so they should be disposed of properly.

The buttons on the remote control work the same way as the corresponding ones on the unit.

Remote control keys

① ⏻
switches the unit on/to standby

② **CD**, **CDR**
selects the CD player deck or the CD recorder deck

③ **TIMER REC**
starts a time restricted recording

④ **Number/alphabet keys**
1–0: keys in numbers for tracks
ABC – WXYZ: keys in letters for CD text
SPACE: keys in a space for CD text
• : keys in a dot or symbol for CD text

⑤ **TR. INCR.**
selects automatic or manual increment of a track

⑥ **PROGRAM**
enters the program menu

⑦ **ALBUM**+
selects the next album on an MP3-CD

⑧ **ALBUM**–
selects the previous album on an MP3-CD

⑨ ▶
starts playback

⑩ ⏮
selects the previous track

⑪ ⏭
selects the next track

⑫ ■
stops playback

⑬ ▶▶
searches forward

⑭ ◀◀
searches backward

⑮ ⏸
interrupts playback

⑯ **DIM**
controls the brightness of the display

⑰ **DISPLAY**
selects display information

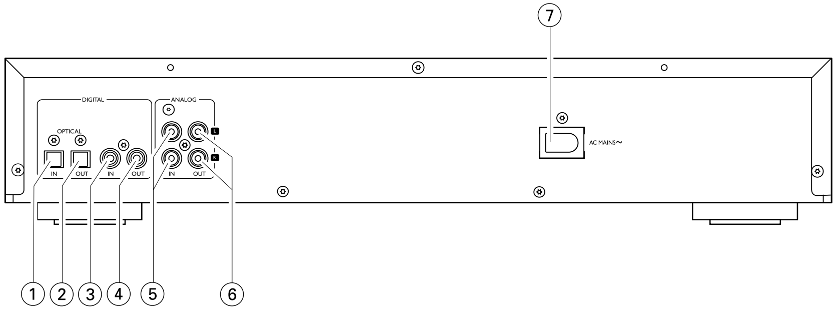
⑱ **CD TEXT/edit**
switches through CD text information, enters/exits the CD text edit menu

⑲ **DELETE**
deletes CD text

⑳ **REPEAT**
repeats a track, an entire CD(RW), or a program

㉑ **SHUFFLE**
plays tracks in random order

Connections



Connections

① **OPTICAL IN**
connect to the digital optical output of an external digital appliance

② **OPTICAL OUT**
connect to the digital optical input of an external digital appliance

③ **DIGITAL IN**
connect to the digital coaxial output of an external digital appliance

④ **DIGITAL OUT**
connect to the digital coaxial input of an external digital appliance

⑤ **ANALOG IN L/R**
connect to the analog audio output of an external appliance

⑥ **ANALOG OUT L/R**
connect to the analog audio input of an external appliance

⑦ **AC MAINS ~**
After all other connections have been made, connect the power cord to the power outlet.

Setup information

Place the unit on a flat, hard and stable surface. Do not position the unit on top of other equipment that might heat it up (e.g. receiver or amplifier), If the unit is placed in a cabinet, make sure to leave at least 3.5 cm (1.5 inches) free around the unit to prevent overheating Active mobile phones near the unit may cause malfunctions.

Connections general

Never make or change connections with the power supply switched on.

For playback the following outputs are present:
- Analog output (ANALOG OUT L/R)
- Digital coaxial output (DIGITAL OUT)
- Digital optical output (OPTICAL OUT)

For external recording the following inputs are present:
- Analog input (ANALOG IN L/R)
- Digital coaxial input (DIGITAL IN)
- Digital optical input (OPTICAL IN)

These inputs can be connected to the corresponding output(s) of your amplifier/receiver or directly to the corresponding output(s) of the external appliance.

It is not possible to connect a turntable directly to ANALOG IN L/R. If you wish to use a turntable with the unit, you have to connect an amplifier/receiver to ANALOG IN L/R on the CD player/recorder. Then connect the turntable to the amplifier.

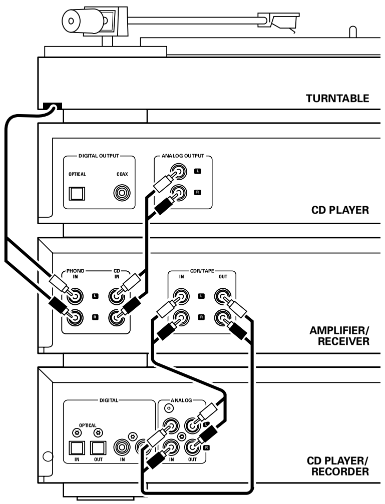
The connections you make will depend upon the possibilities your audio equipment offers and how you are going to use the unit. Please refer to the user manuals for your audio equipment first.

We recommend doing analog recording only if digital recording is not possible. Digital recording will result in better sound quality.

If possible, always make both digital and analog connections. In this way you can always make analog recordings when digital recording is not possible.

Analog connections

These connections are required for playback and recording via an amplifier/receiver, equipped with analog in- and outputs.



1 Connect the red plug of the supplied audio cable (cinch) to the red jackANALOG IN R and the white plug to the white jackANALOG IN L on the CD player/recorder:

2 Connect the other end of the audio cable to the analog outputs of the amplifier/receiver (CDR OUT,TTAPE OUT, AUX OUT, REC OUT, etc.).

3 Connect the red plug of the supplied audio cable (cinch) to the red jackANALOG OUT R and the white plug to the white jackANALOG OUT L on the CD player/recorder:

4 Connect the other end of the audio cable to the analog inputs of the amplifier/receiver (CD-R,TAPE IN, AUX, PLAY IN, etc.).

5 Connect all other components of your system (tape deck, CD player, tuner, turntable, etc.) via their analog outputs to the appropriate analog inputs of the amplifier/receiver (CD IN,TUNER IN, AUX IN, PHONO IN, etc.).

○ Recording can be done now with any appliance connected to an analog input of the amplifier/receiver: Press INPUT on the CD player/recorder repeatedly to select the analog input.
`ANALOG IN` is displayed.

How to connect if the analog output on the amplifier/receiver is already being used (occupied)
Most amplifiers/receivers have multiple analog output connections (TAPE, VCR, …), but some amplifiers/receivers have only 1 analog output In case you have already hooked up a tape deck (DAT recorder or MD recorder) to this output you will have to change the existing connections.

1 Disconnect the analog connections from the tape deck to the amplifier/receiver.

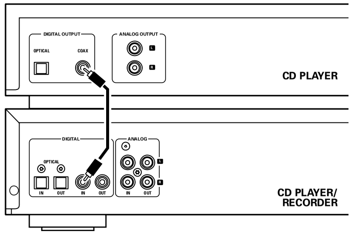
2 Connect the CD player/recorder (see steps 1–4 in the previous chapter).

3 Connect the analog outputs of the tape deck to any free analog inputs (AUX, CD) on the amplifier/receiver: You can now playback your tape or record from your tape deck on CD. However, it is no longer possible to record on tape.

Digital connections

Direct digital coaxial connection

This connection is required for direct recording from any digital audio equipment with a digital coaxial output (e.g. CD player or DVD player).

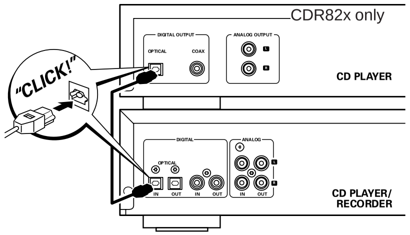


Use a digital coaxial cable to connect the coaxial output of the external appliance with DIGITAL IN on the CD player/recorder:

○ Recording can be done now via the digital coaxial input. Press INPUT on the CD player/recorder repeatedly to select the digital coaxial input.
`DIGITAL IN` is displayed.

Direct digital optical connection

This connection is required for direct recording from any digital audio equipment with a digital optical output (e.g. CD player or DVD player).



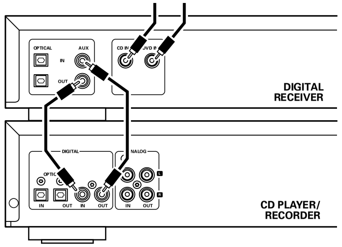
1 Remove the dust caps from the digital optical input of the CD player/recorder and from the digital optical output of the external appliance. Keep the caps in a safe place.

2 Use a digital optical cable to connect the optical output of the external appliance with OPTICAL IN on the CD player/recorder. Make sure you insert both plugs fully, until a click is heard.

○ Recording can be done now via the digital optical input. Press INPUT repeatedly on the CD player/recorder to select the digital optical input.
`OPTICAL IN` is displayed.

Digital coaxial connections via a digital receiver

If you have a receiver with digital coaxial in- and outputs, these connections allow you to make digital recordings from various sources connected to the receiver.

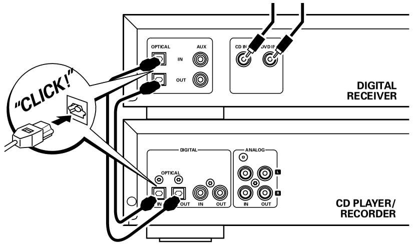


Use a coaxial cable to connect the digital coaxial input of the receiver with DIGITAL OUT on the CD player/recorder. Use another coaxial cable to connect the digital coaxial output of the receiver with DIGITAL IN on the CD player/recorder.

○ Recording can be done now with any digital appliance connected to a digital input of the digital receiver (e.g. CD player or DVD player). Press INPUT on the CD player/recorder repeatedly to select the digital coaxial input.
`DIGITAL IN` is displayed.

Digital optical connections via a digital receiver

If you have a receiver with digital optical in- and outputs, these connections allow you to make digital recordings from various sources connected to the receiver.



1 Remove the dust caps from the digital optical in- and outputs of the CD player/recorder and from the digital optical output of the receiver. Keep the caps in a safe place.

2 Use a digital optical cable to connect the optical input of the receiver with OPTICAL OUT on the CD player/recorder. Use another digital optical cable to connect the optical output of the receiver with OPTICAL IN on the CD player/recorder. Make sure you insert the plugs fully, until a click is heard.

○ Recording can be done now with any digital appliance connected to a digital input of the digital receiver (e.g. CD player or DVD player). Press INPUT on the CD player/recorder repeatedly to select the digital optical input.
`OPTICAL IN` is displayed.

Power

The type plate is located on the rear of the unit.

1 Check whether the power voltage as shown on the type plate corresponds to your local power voltage. If it does not, consult your dealer or service organization.

2 ***Make sure all connections have been made before switching on the power supply.***

3 Connect the power cable supplied to AC MAINS ~ and to the power outlet. This switches on the power supply.

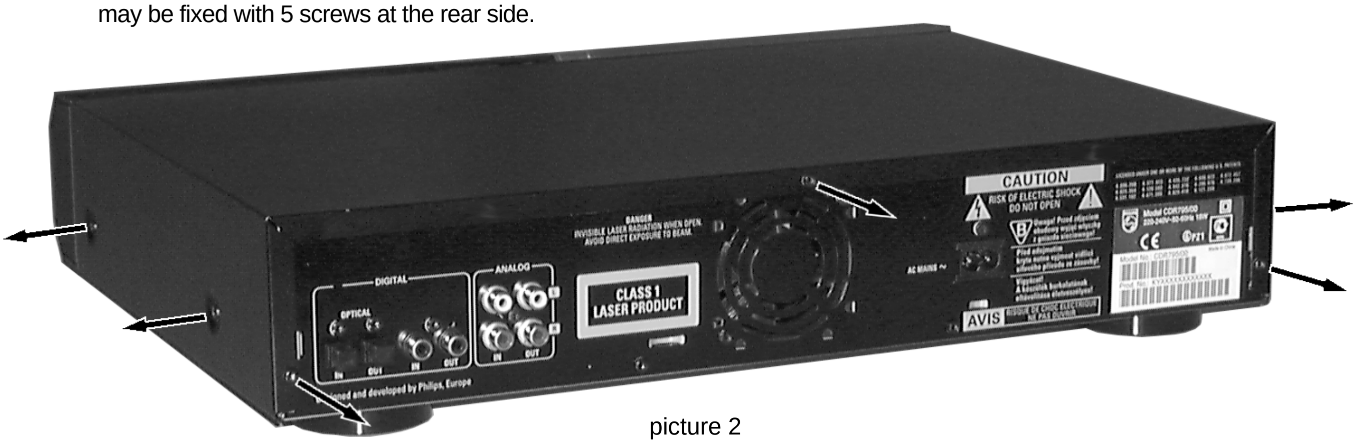
When the unit is switched to standby, it is still consuming some power. ***To disconnect the unit from the power completely, remove the power plug from the power outlet.***

DISMANTLING INSTRUCTIONS

Dismantling the *Top Cover*

- Remove 7 (9) screws as shown in picture 2.
- Raise top cover at the rear and pull it backwards.

remark: in some production batches the top cover may be fixed with 5 screws at the rear side.

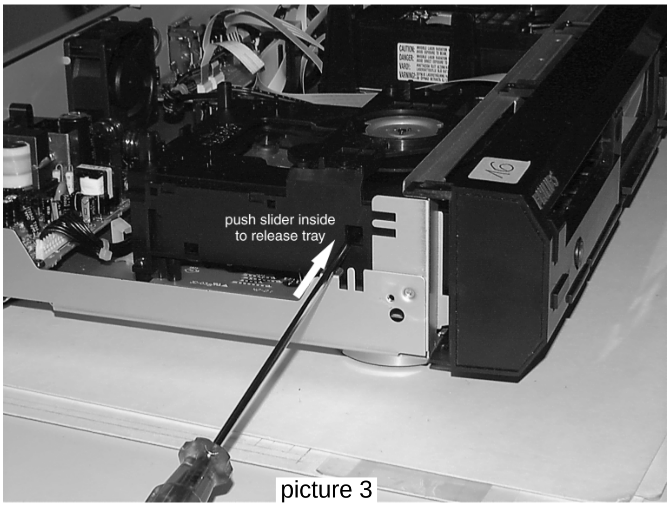

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
DANGER
INVISIBLE LASER RADIATION WHEN OPEN.
AVOID DIRECT EXPOSURE TO BEAM.
DIGITAL
OPTICAL
IN
OUT
ANALOG
CLASS 1
LASER PRODUCT
AC MAINS ~
AVIS

picture 2

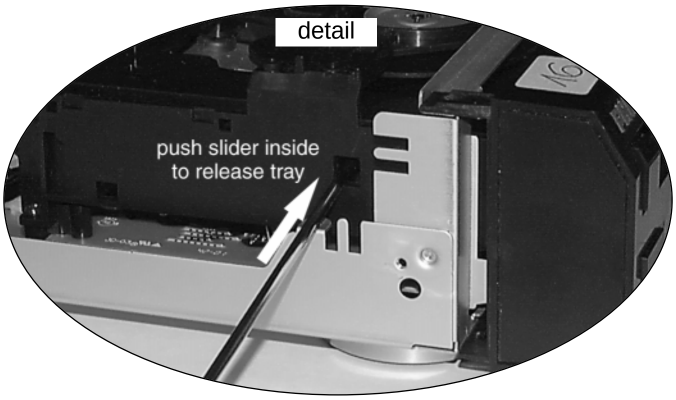
Dismantling the *Tray Covers*

To dismantle the ornamental cover, the tray has to be moved out first.
This can either be done by activating the Open/Close-key or manually.
In order to avoid unnecessary loading it is recommended to move the tray out manually a few centimetres.
To release the tray manually proceed as shown in pictures 3, 4, 5 and 6. The tray will move out a little.
Afterwards it can be pulled out as far as convenient.

Release tray of CD Loader

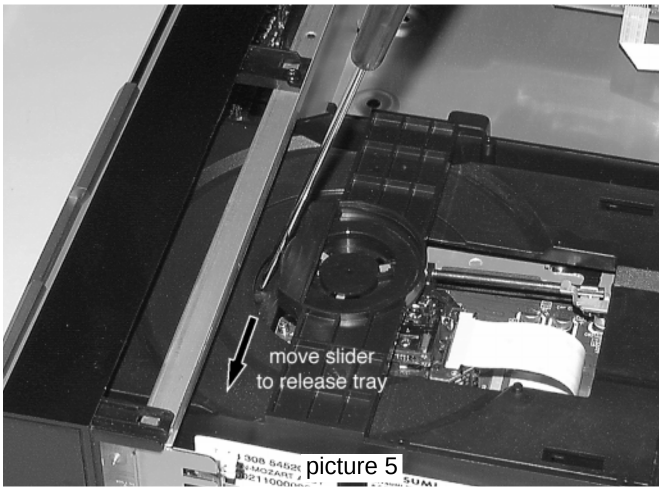

push slider inside
to release tray

picture 3


detail
push slider inside
to release tray

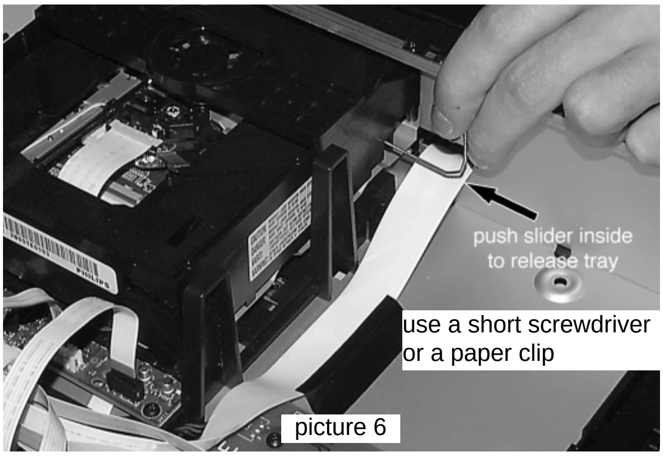
picture 4

Release tray of CDR module


move slider
to release tray

picture 5

or


push slider inside
to release tray

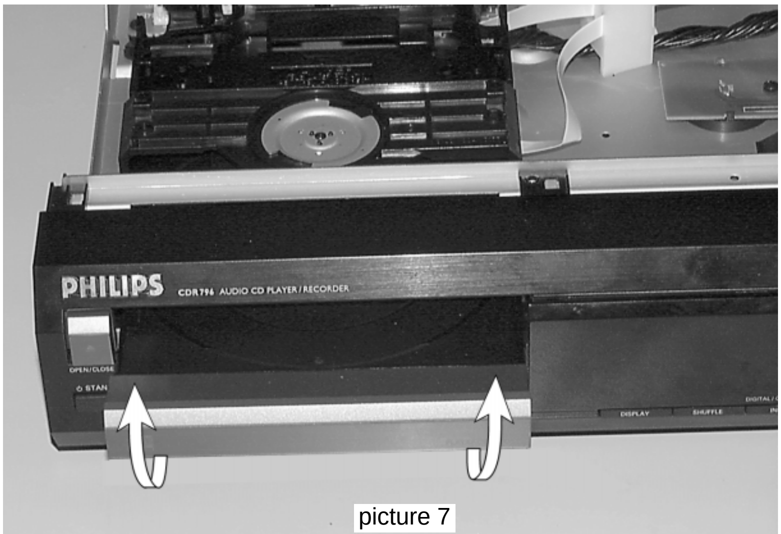
use a short screwdriver or a paper clip

picture 6

DISMANTLING INSTRUCTIONS

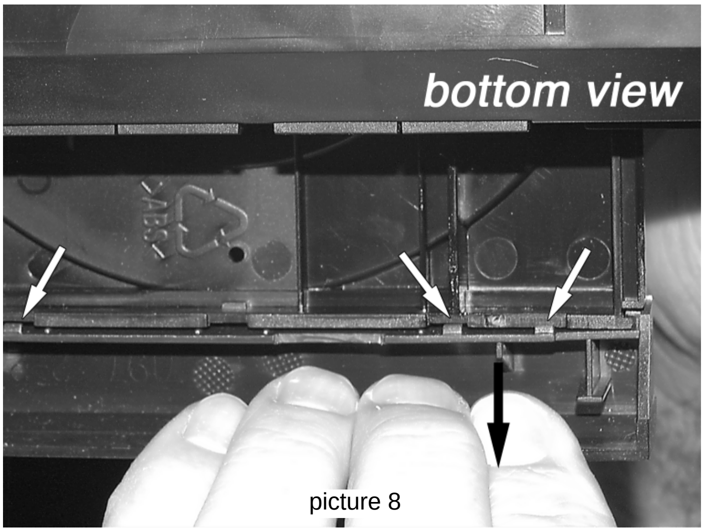
Dismantling the *Tray Covers*

continued


PHILIPS
CDR796 AUDIO CD PLAYER / RECORDER

picture 7

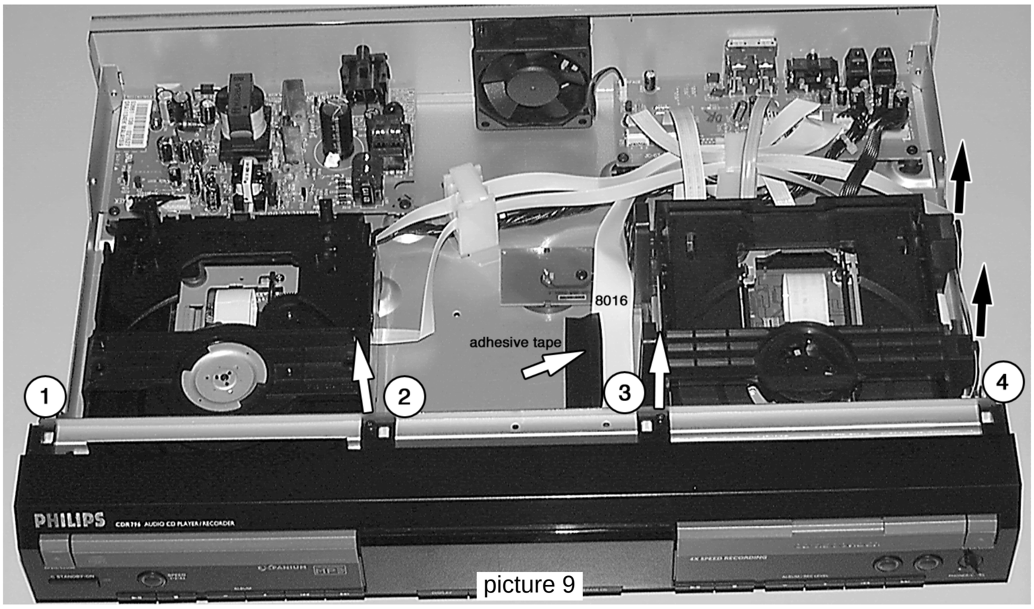
- To release the cover from the catch on the tray, pull it frontwards on bottom side as shown in picture 7 and 8.
- Pull the cover up.


bottom view

picture 8

Dismantling the ornamental cover from the *CDR-tray* functions in the same manner.

Dismantling the *Front Cabinet*

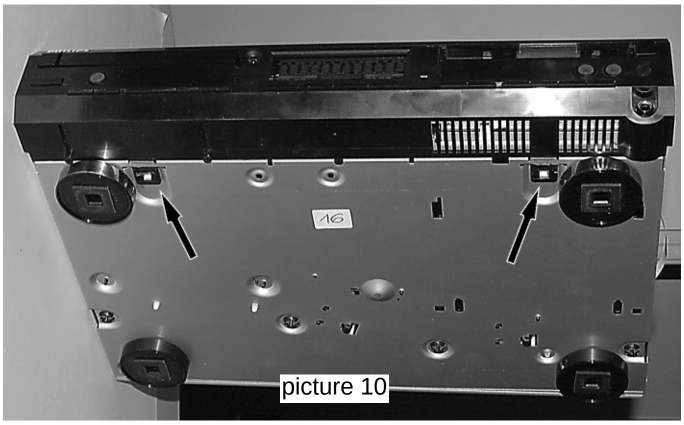

8016
adhesive tape
1
2
3
4
PHILIPS

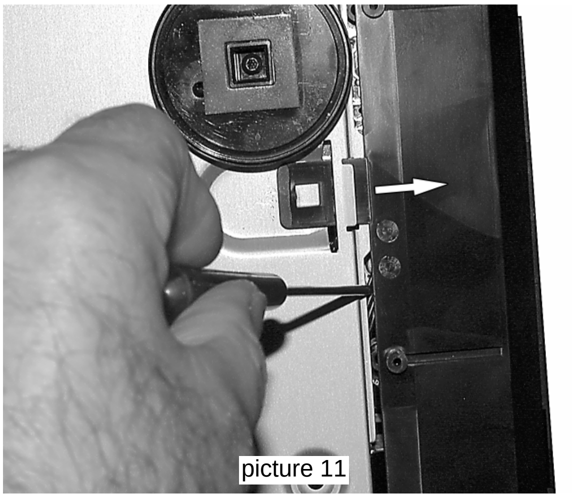
picture 9

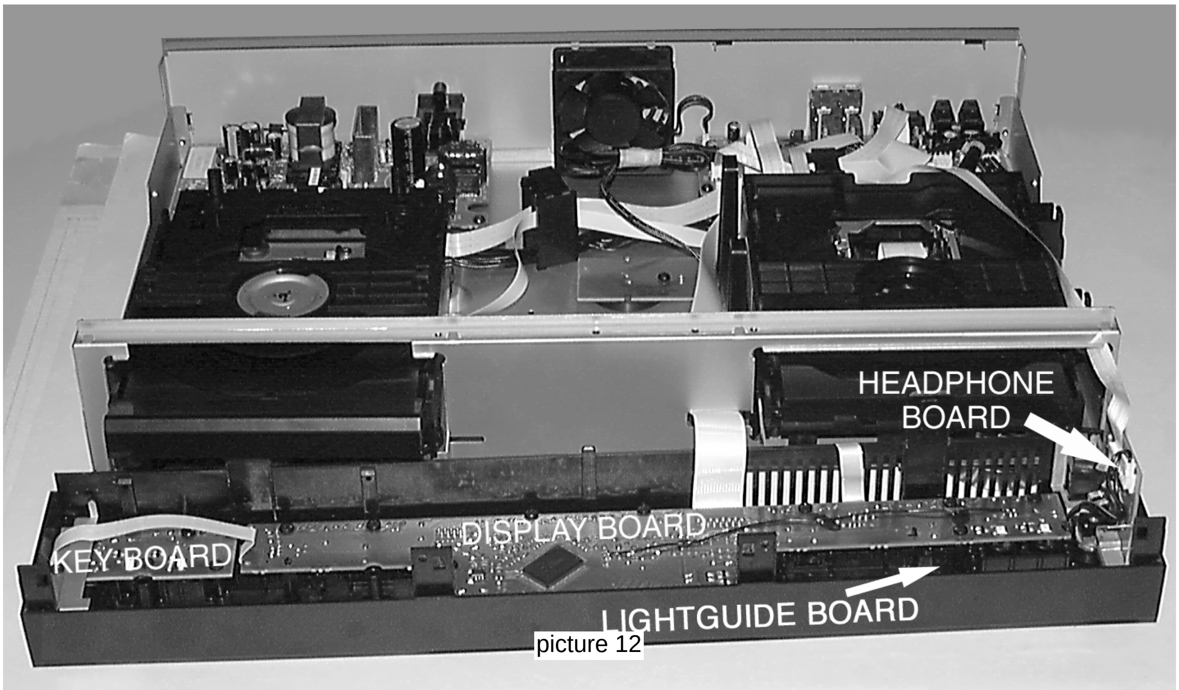
- Remove top cover and ornamental covers from the trays first → see description above and on page 4-1.
- Move trays back to *closed* position.
- Loosen 2 screws as shown in picture 9.
- Remove adhesive tape from cable 8016 and take cable to Headphone Board out of its guidings on the right side of the CDR support.
- Release 4 catches on top (as shown in picture 9) first, then 2 catches on bottom (see picture 10).

Dismantling the ***Front Cabinet***
continued

- Pull front cabinet forwards.
  As the lug fits very tight in the bottom it is recommended to make use of a screwdriver (see picture 11).
- Place front cabinet as shown in picture 12.

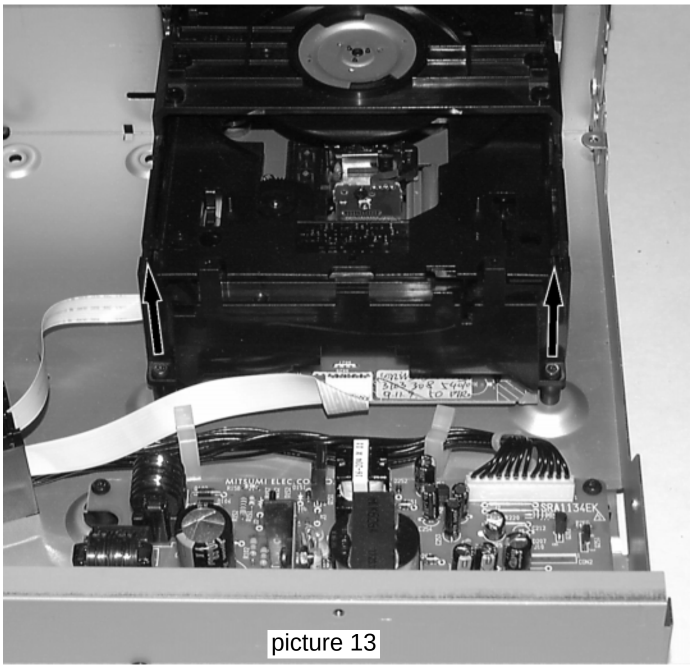

picture 10


picture 11


HEADPHONE BOARD
DISPLAY BOARD
KEY BOARD
LIGHTGUIDE BOARD
picture 12

DISMANTLING INSTRUCTIONS

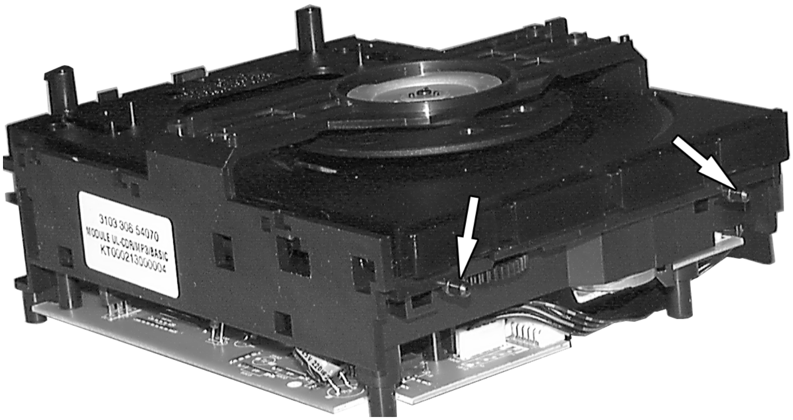
Dismantling the *CD module*

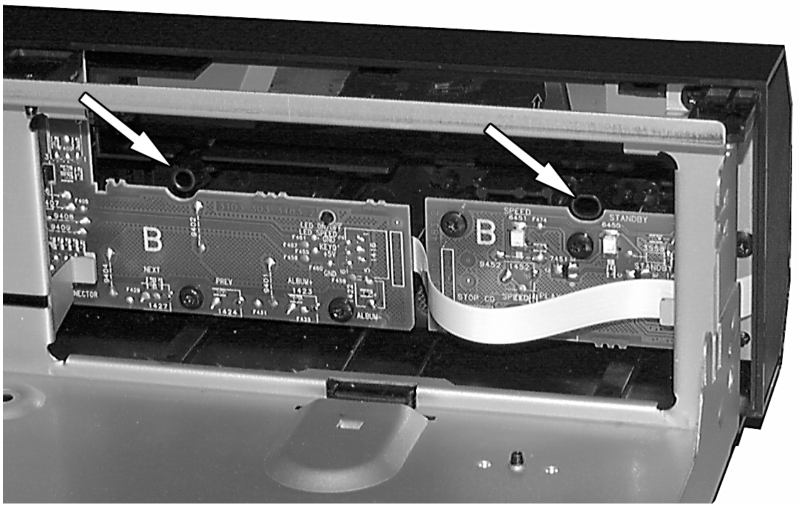

picture 13

- Remove top cover and ornamental cover from the tray first → see description on pages 4-1 and 4-2.
- Loosen 2 screws at the rear side → see picture 13.
- Move the complete module backwards.
- Pull the module on rear side up and turn it out.
- Put the module to a proper service position. → see also chapter SERVICE HINTS.

Mounting the *CD module*

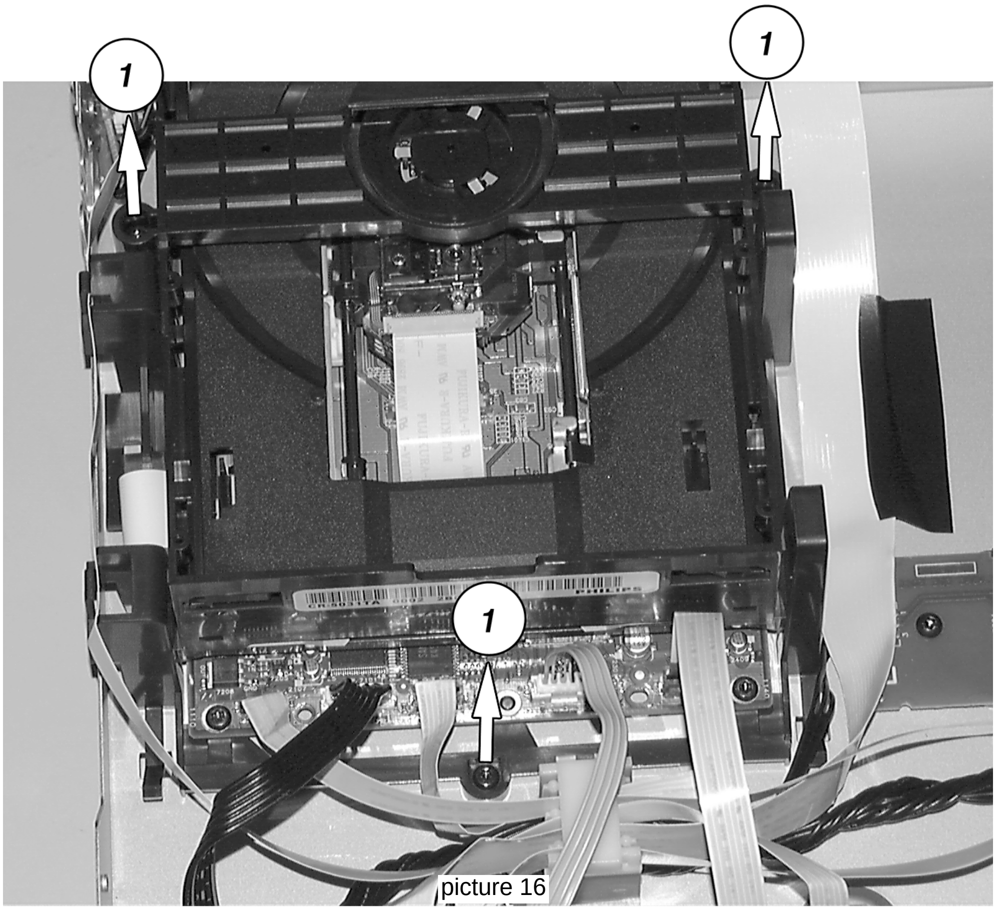
- For proper mounting it is necessary that the pins on the front side (see picture 14) are put into the feed holes on the front cabinet (see picture 15).
- Move the module frontwards until the guiding pins at the rear slip into the holes on the bottom.
- Fix the module with 2 screws at the rear (see picture 13).


3103 308 54070
MODULE UL-CD/MP3/BASIC
picture 14

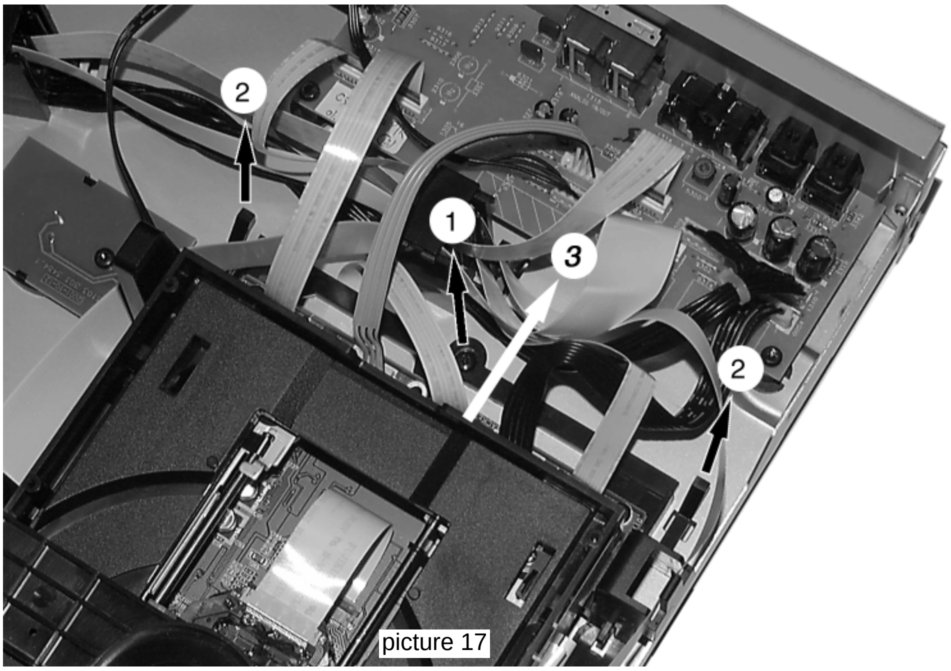

B
B
NEXT
PREV
ALBUM+
ALBUM-
SPEED
STANDBY
STOP CD
picture 15

Dismantling the *CDR module*

- Remove top cover and ornamental cover from the tray first → see description on pages 4-1 and 4-2.
- move tray back to *closed* position.
- to dismantle the **complete module:**
  - loosen 3 screws to bottom cabinet (see picture 16 ①)
  - disengage catches (see picture 17 ②)
  - move module backwards ③ until catches to bottom cabinet become free and pull it up.



picture 16



picture 17

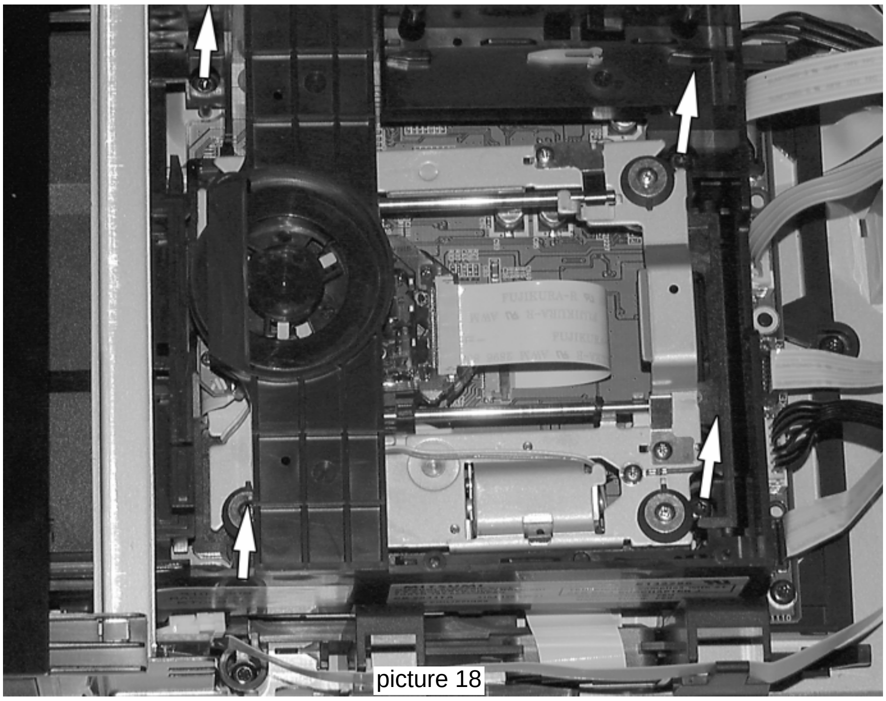
DISMANTLING INSTRUCTIONS

Dismantling the *CDR module*
continued

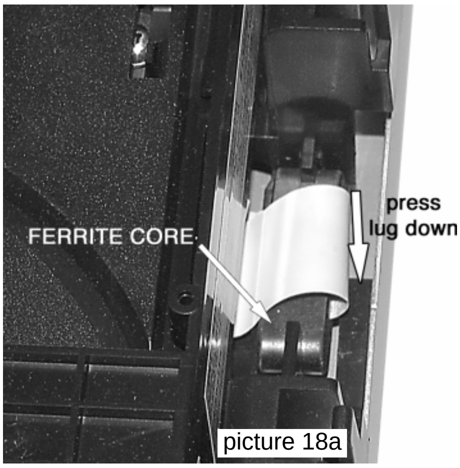
- to dismantle the **Loader module:**
  - move tray completely out.
  - loosen 4 screws to frame as shown in picture 18.

  attention: flex wire to Mozart Board is too short for simple fetching the loader out. It is advised either to dismantle the complete module as described on page 4-5 and to move it a few centimetres back or to loosen ferrite core as shown in picture 18a.
  - put the module to a proper service position.

  → see also chapter SERVICE HINTS.


picture 18

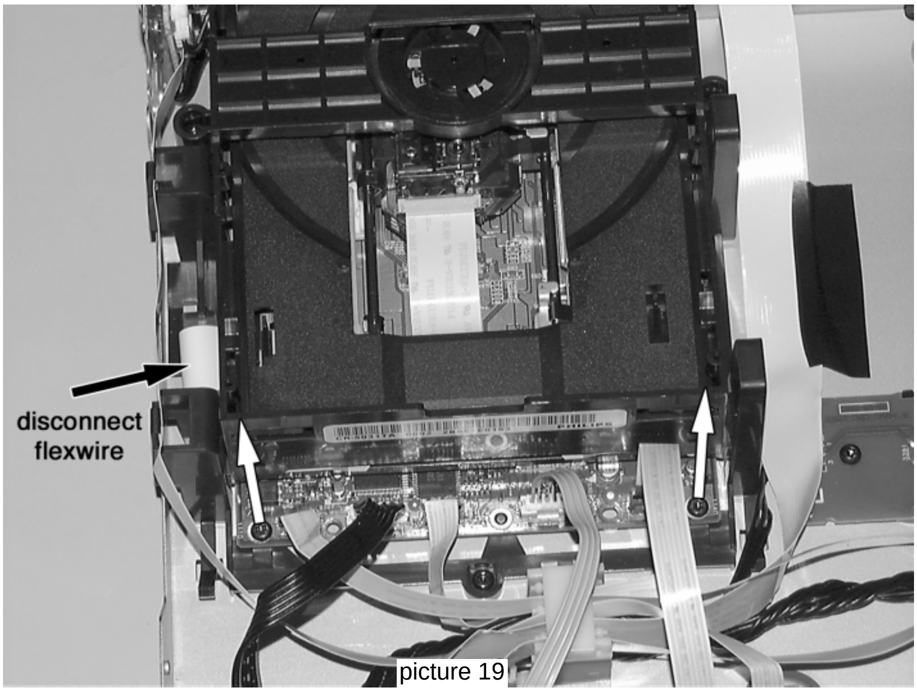
Press locking lug with a screwdriver down and move ferrite core out of its guiding. Turn ferrite core up and move it gently along the cable.



picture 18a

- to dismantle the **MOZART Board:**
  - loosen 2 screws to frame as shown in picture 19.
  - unlock flex foil connector and disconnect flex wire.
  - pull the board out of it´s guidings (backwards).
  - place the Mozart board to a proper service position.

  → see also chapter SERVICE HINTS.

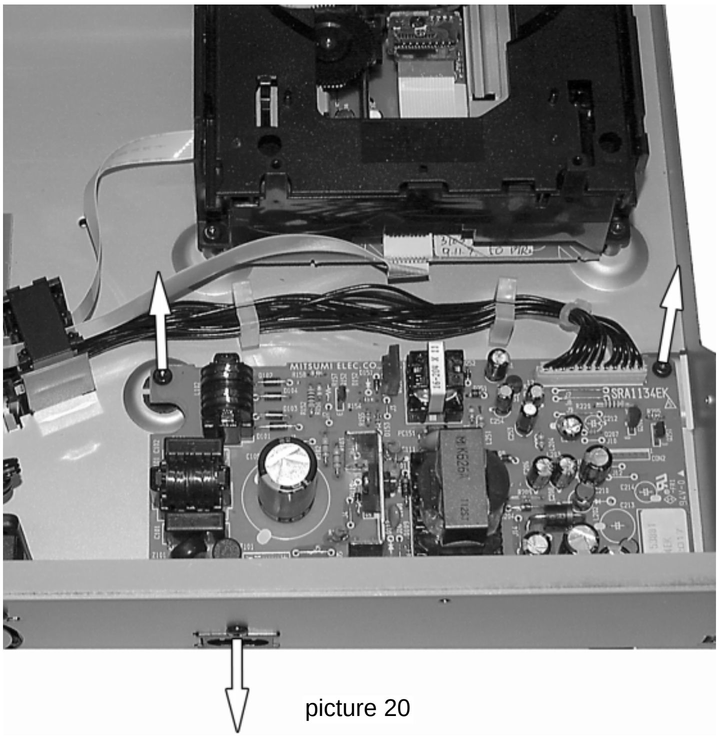


picture 19

DISMANTLING INSTRUCTIONS

Dismantling the *Power board*

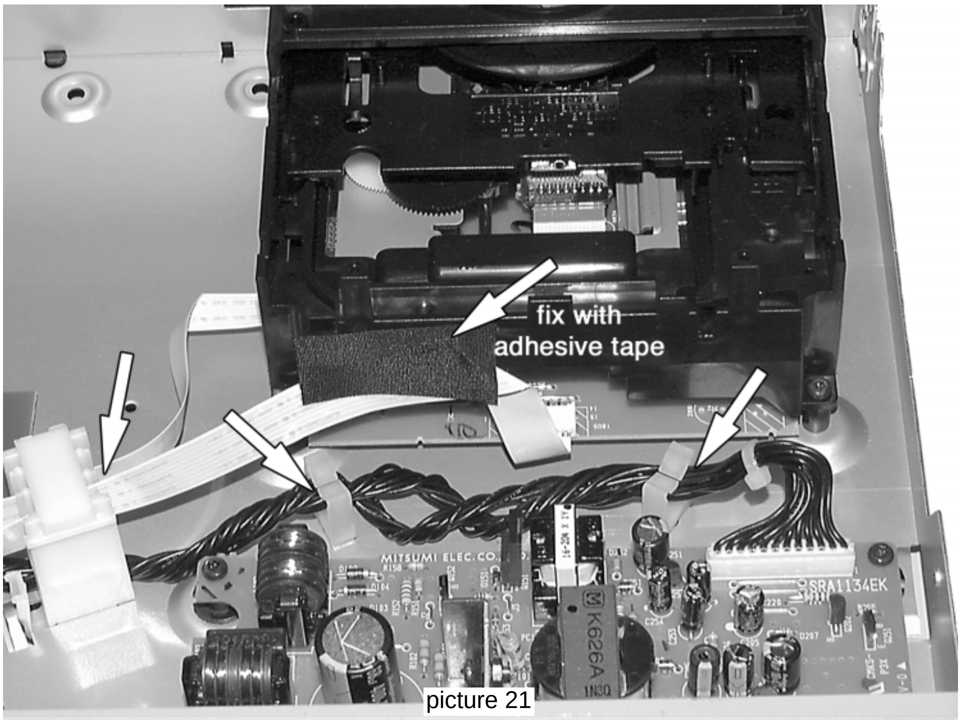
- Remove top cover first → see description on page 4-1.
- Loosen 3 screws as indicated in picture 20.
- Move the board backwards to release the mains socket.
- Lift it on the rear and turn it out.



picture 20

⚠

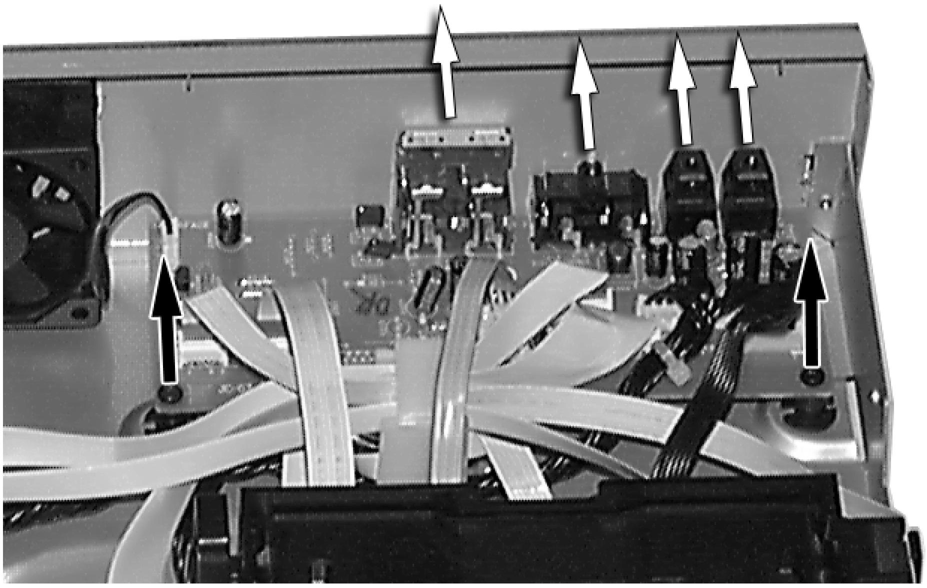
Attention: to fulfil safety requirements after repair it is absolutely necessary to fix the cables as in its original condition. See picture 21.



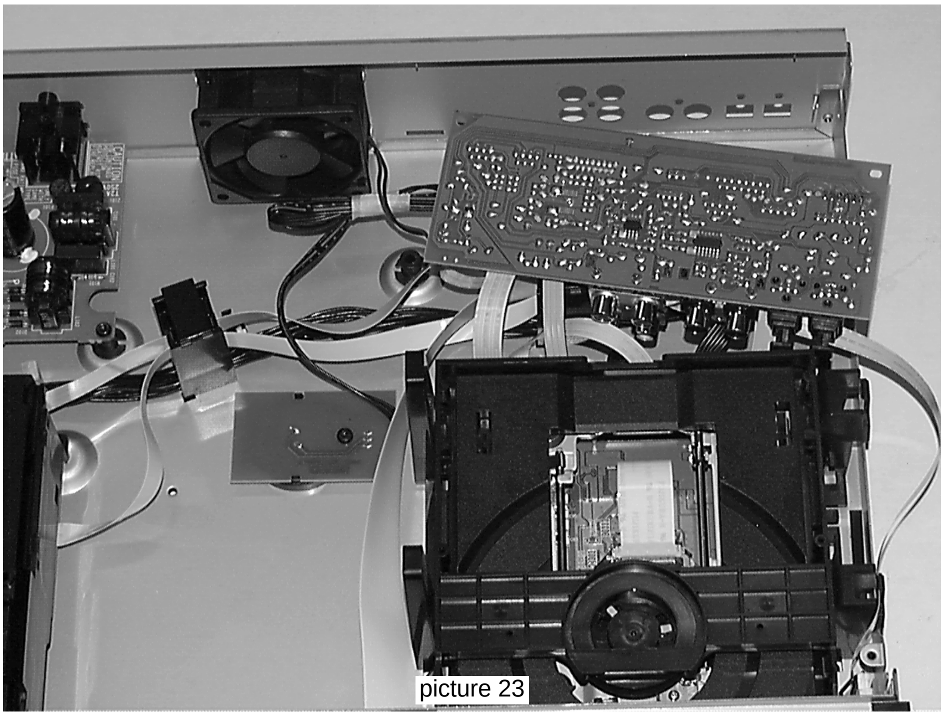
picture 21

Dismantling the ***Interface Board***

- Remove top cover first → see description on page 4-1.
- Loosen 2 screws from the board and 4 screws from sockets at the rear plate.
- Move the Interface board backwards to release the sockets and turn it out (if necessary disengage cable guide).
- place the Interface board to a proper service position.
  → see also chapter SERVICE HINTS.



picture 22



picture 23

SERVICE HINTS

SERVICE TOOLS

TORX T10 screwdriver with shaftlength 150mm	4822 395 50423
TORX screwdriver set SBC 163	4822 295 50145
Audio signal disc SBC 429	4822 397 30184
Playability test disc SBC444	4822 397 30245
Test disc 5 (disc without errors) +	
Test disc 5A (disc with dropout errors, black spots and fingerprints) SBC 426/426A	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30dB level without "pause")	4822 397 30155

DEALER MODE

The sets are equipped with a special DEALER MODE. This mode blocks the trays of the CD - and CDR module to prevent customers from fetching out CDs from exhibition sets.

The Dealer mode can be switched on/off as follows:

1) Switch the set with the Remote Control to [Standby]
2) Press the [DISPLAY] key at least for 5s
→ Display shows
TRAYS LOCKED else UNLOCKED

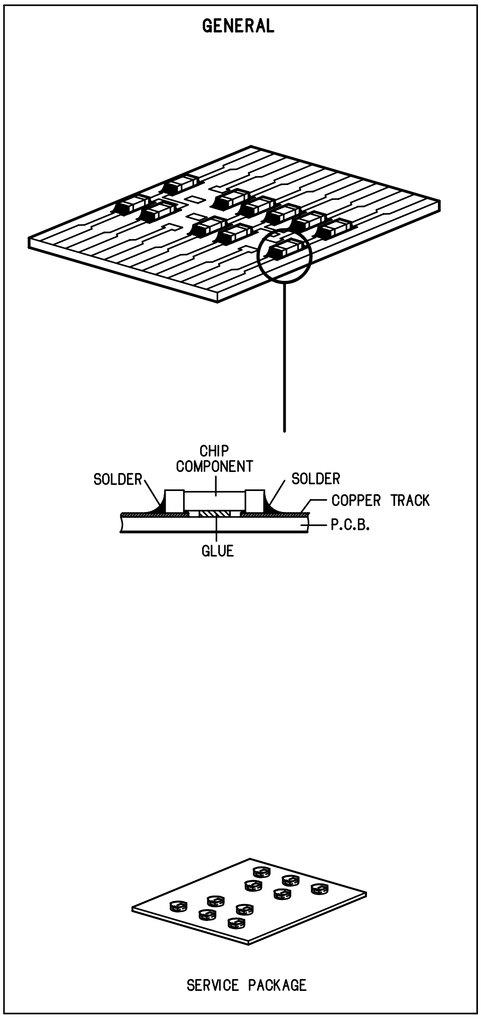
DEMO MODE

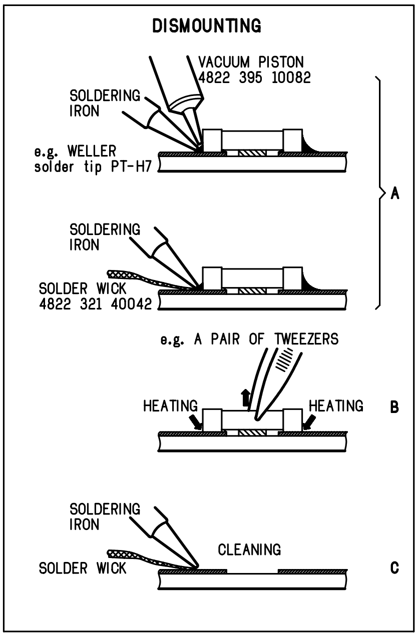
The DEMO MODE displays various features of the set and will start automatically when no key has been pressed for several minutes or during Standby mode.

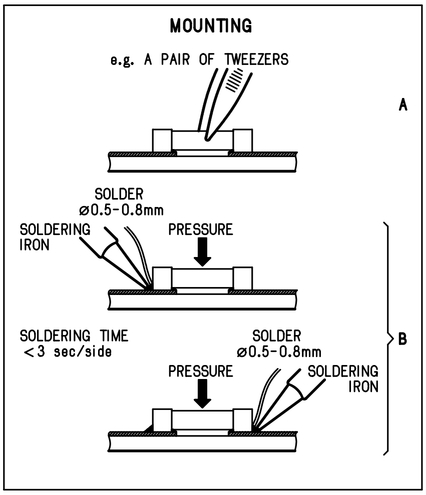
The Demo mode can be switched on/off as follows:

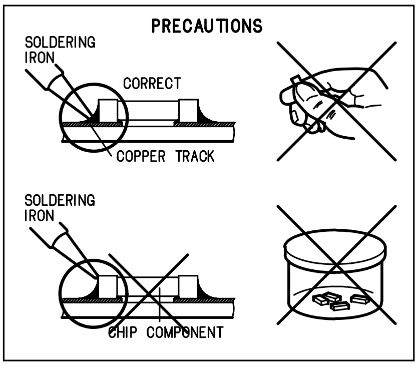
1) Switch the set with the Remote Control to [Standby]
2) Press the [STOP] key on the set at least for 5s
→ Display shows
DEMO ON else DEMO OFF

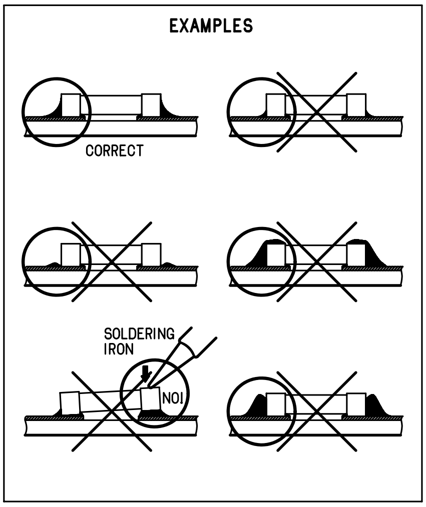
HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON 4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK 4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
SOLDER WICK
CLEANING
C


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER ⌀0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME <3 sec/side
SOLDER ⌀0.5-0.8mm
PRESSURE
SOLDERING IRON
B

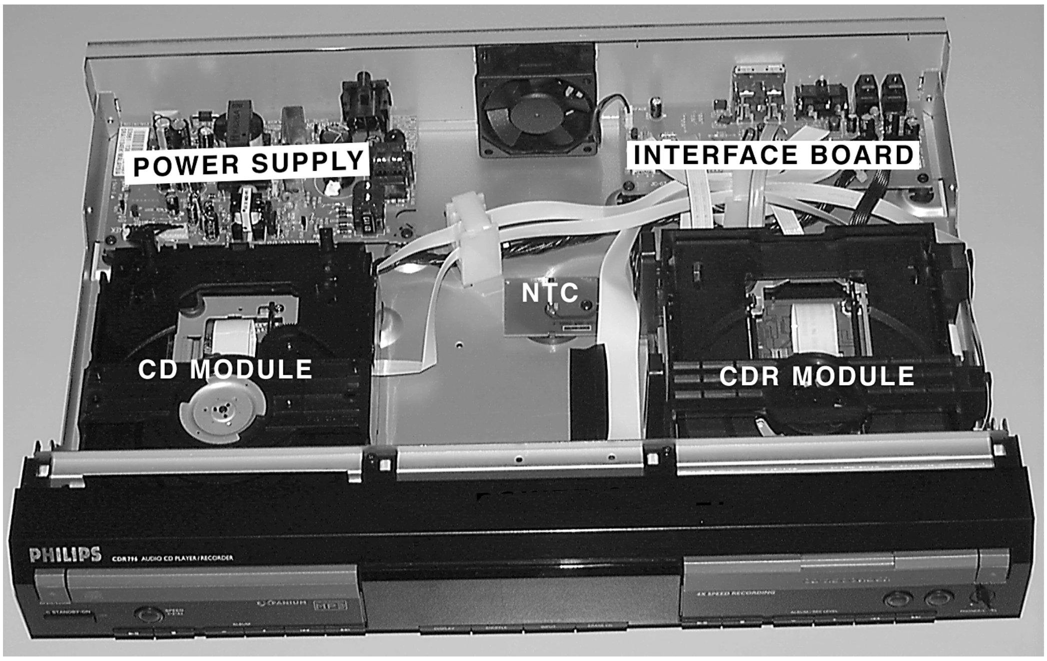

PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


EXAMPLES
CORRECT
SOLDERING IRON
NO!

SERVICE HINTS

General Service position

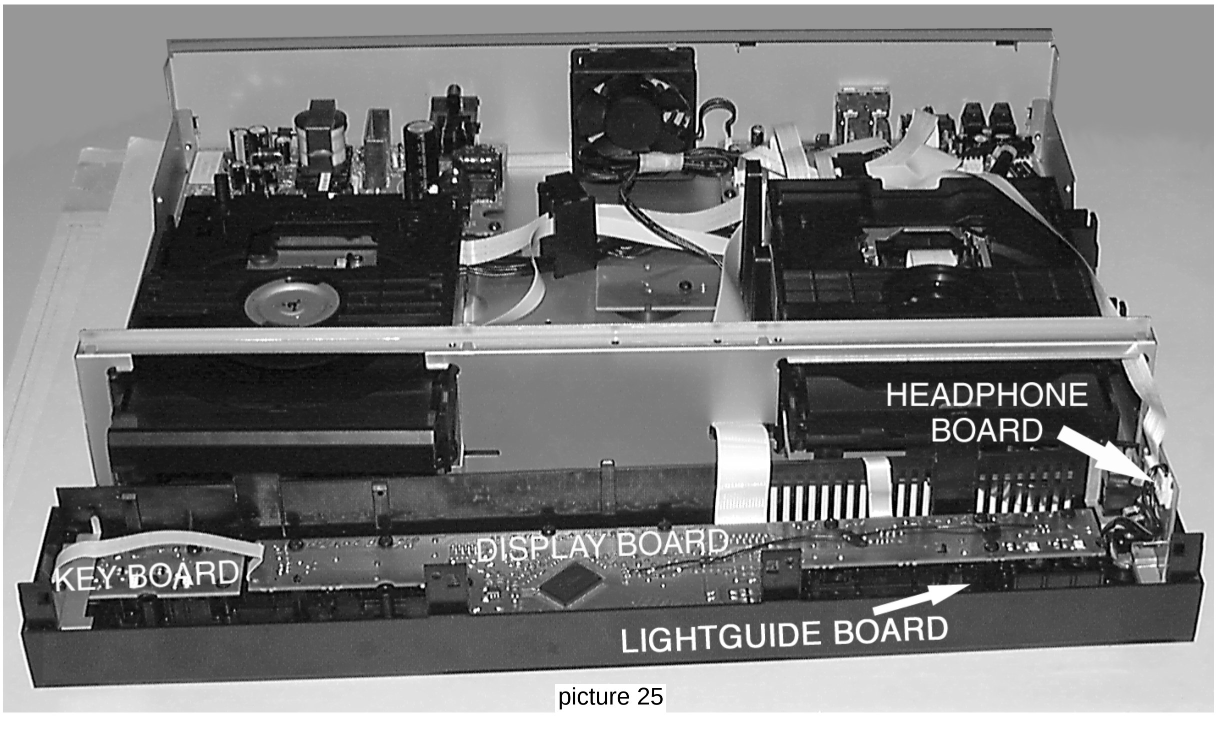
For measurements on: Power Board
Intrface Board
For manual release of: CD tray
CDR tray


POWER SUPPLY
INTERFACE BOARD
NTC
CD MODULE
CDR MODULE
PHILIPS

picture 24

Service position *Front Board*

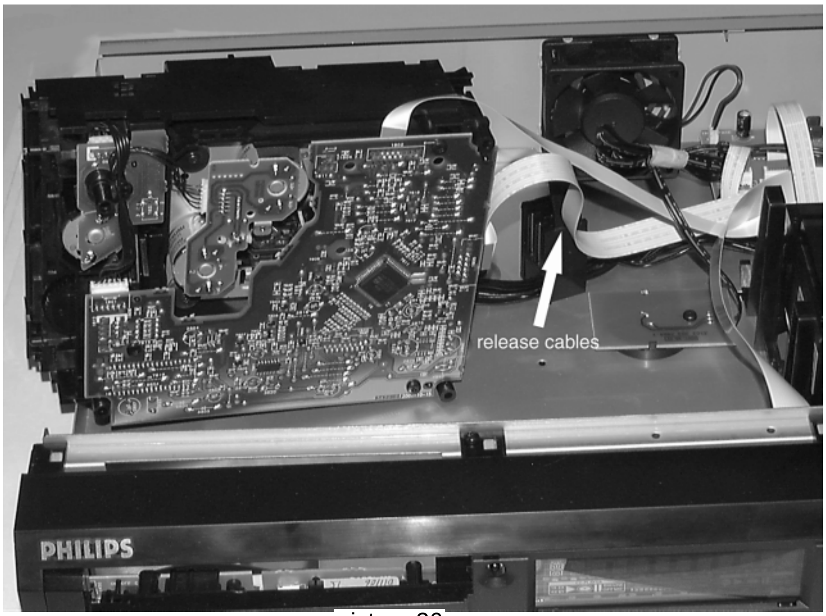
For dismantling instructions see chapter 4-1 to 4-3


HEADPHONE BOARD
DISPLAY BOARD
KEY BOARD
LIGHTGUIDE BOARD

picture 25

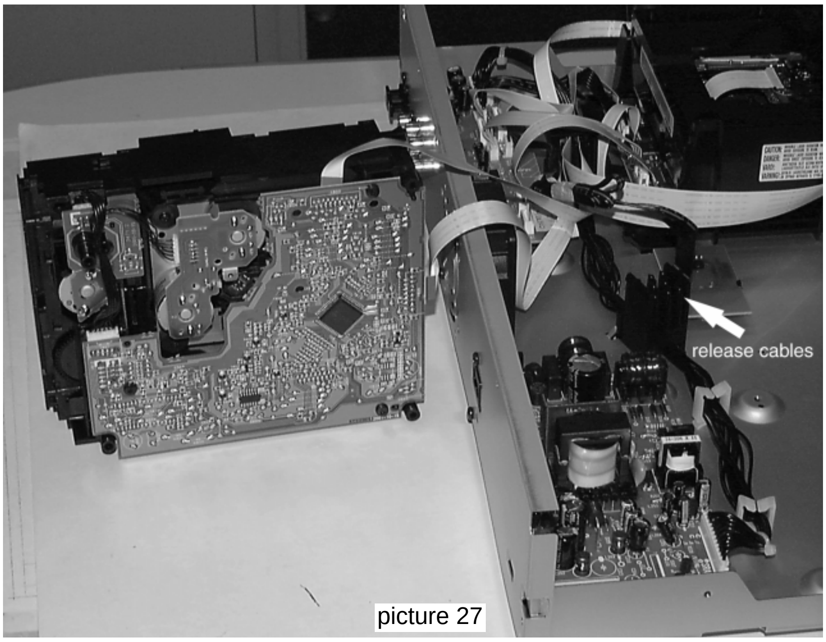
SERVICE HINTS

Service position *CD Module*

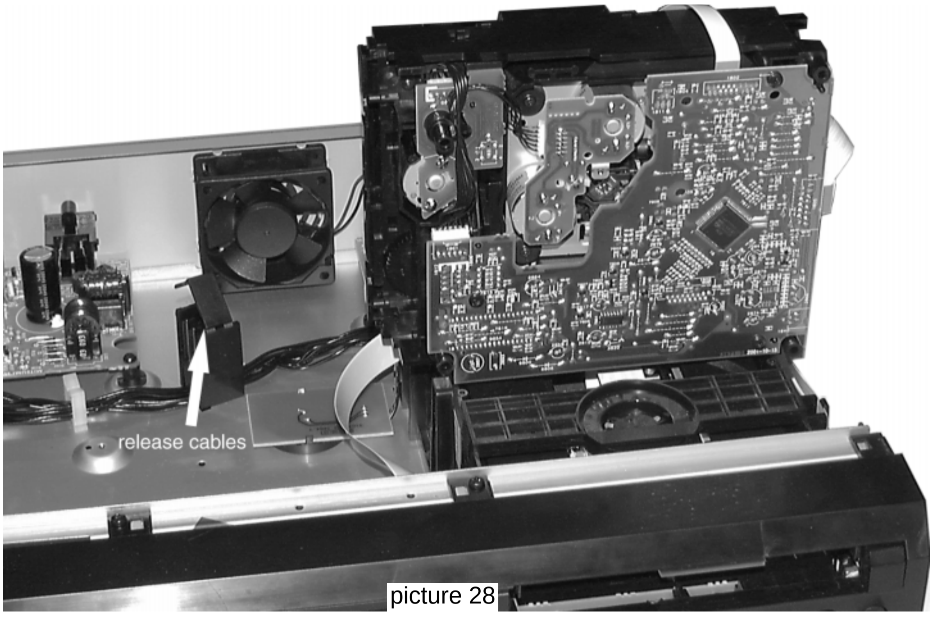

release cables
PHILIPS

picture 26

For dismantling instructions see chapter 4-4.


release cables

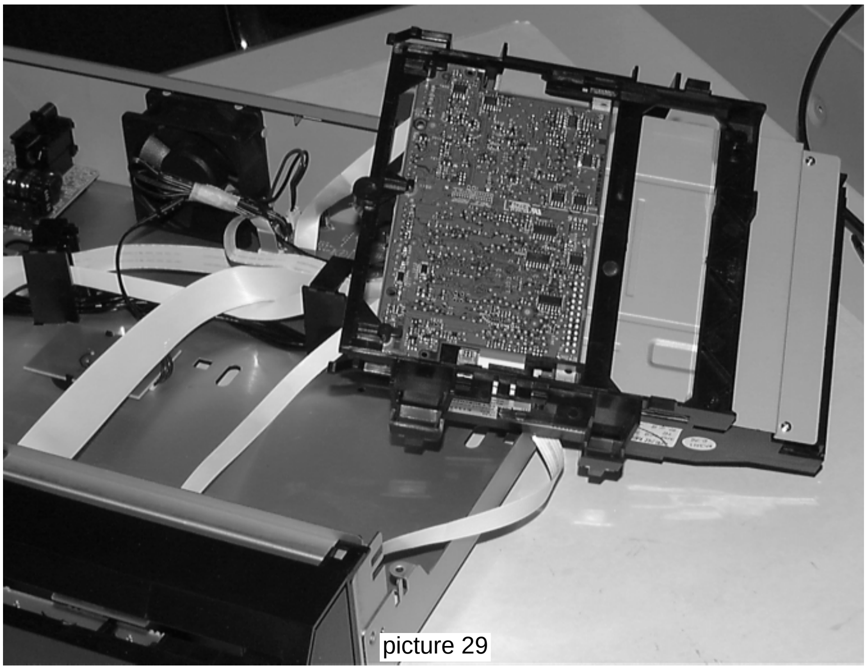
picture 27


release cables

picture 28

Service position *CDR Module*

For dismantling instructions see chapter 4-5.

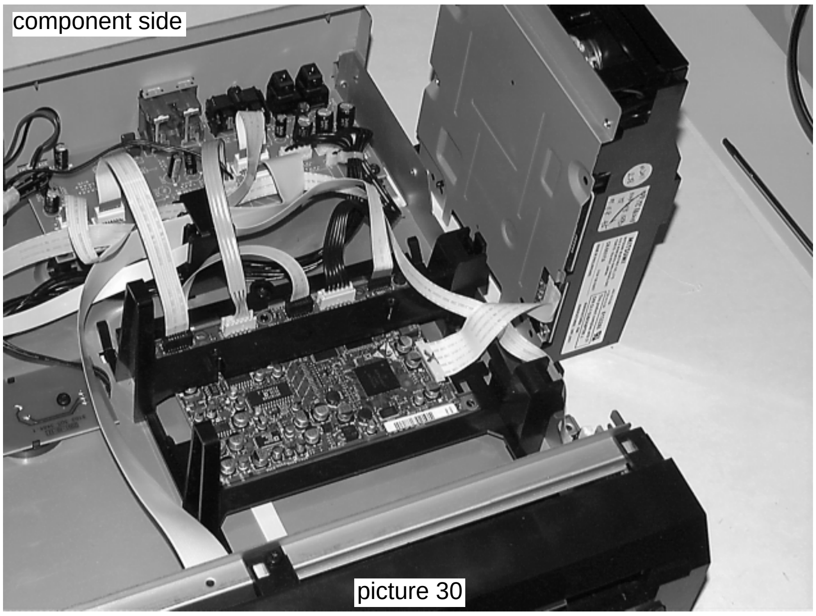


picture 29

Service position *MOZART Board*
(Back-end)

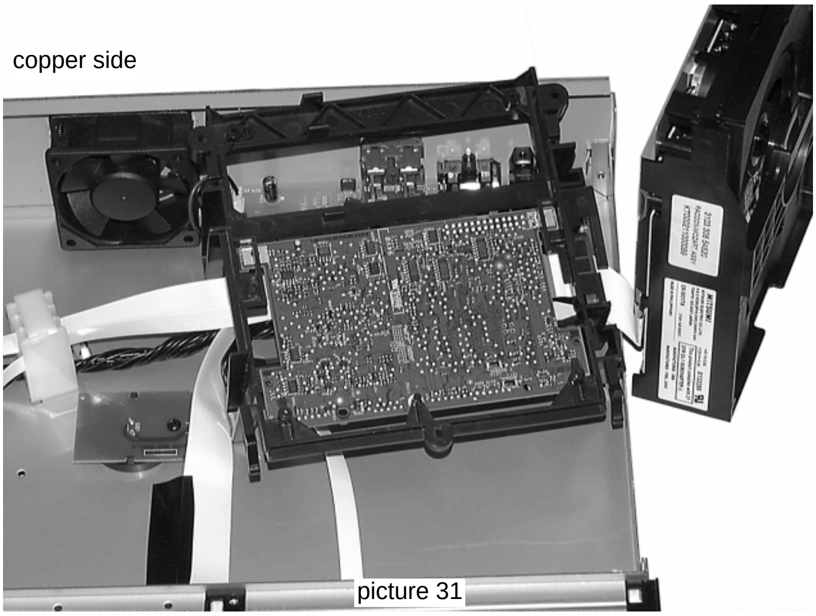
For dismantling instructions see chapter 4-6.

component side



picture 30

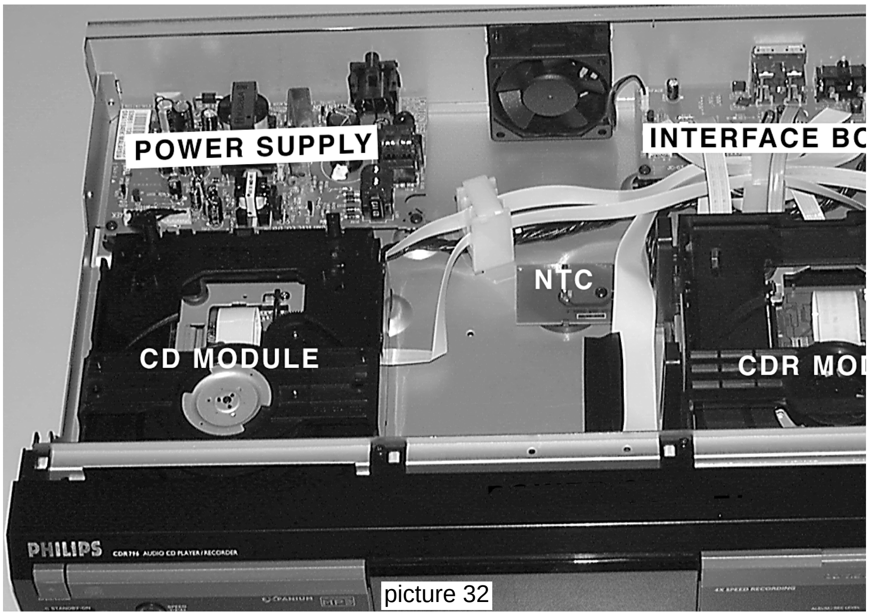
copper side



picture 31

Service position *Power Board*

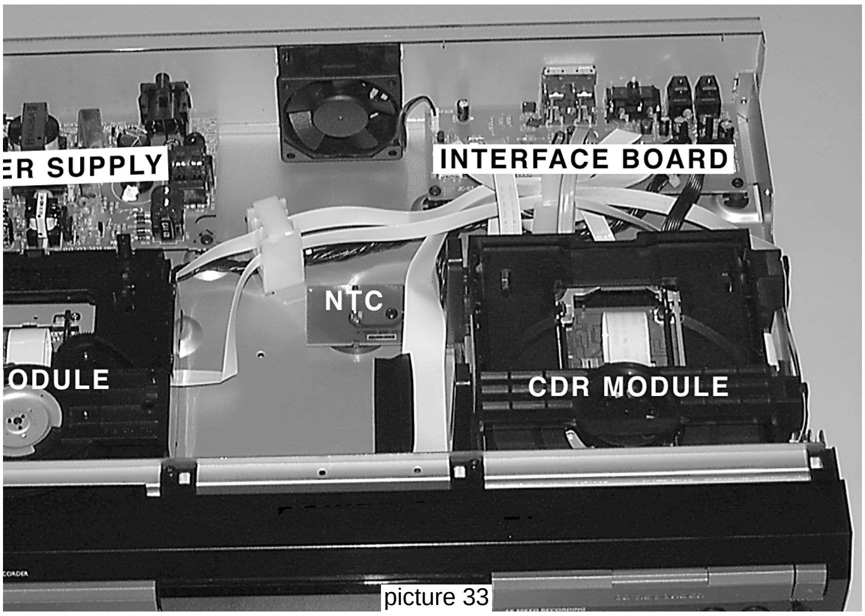
For dismantling instructions of the top cover see chapter 4-1.
All important measurements can be carried out from the component side without any further dismantling.


POWER SUPPLY
INTERFACE BO
NTC
CD MODULE
CDR MOD
PHILIPS

picture 32

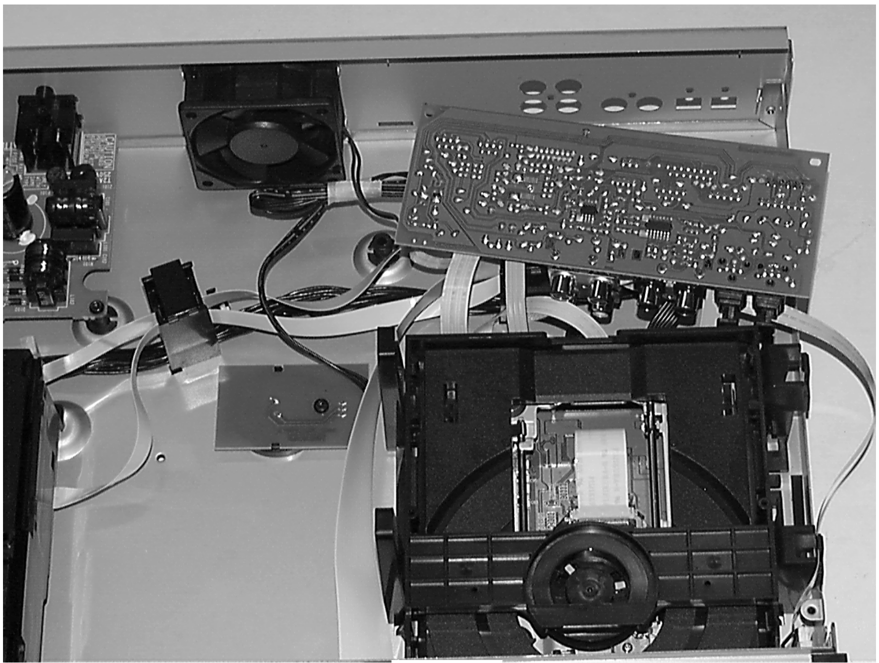
Service position *Interface Board*

For dismantling instructions of the top cover see chapter 4-1.
Component side is now accessible without any further dismantling.


ER SUPPLY
INTERFACE BOARD
NTC
ODULE
CDR MODULE

picture 33

To get access to the copper side the board has to be dismantled and turned to service position as shown in picture 34.
For dismantling instructions see chapter 4-8.

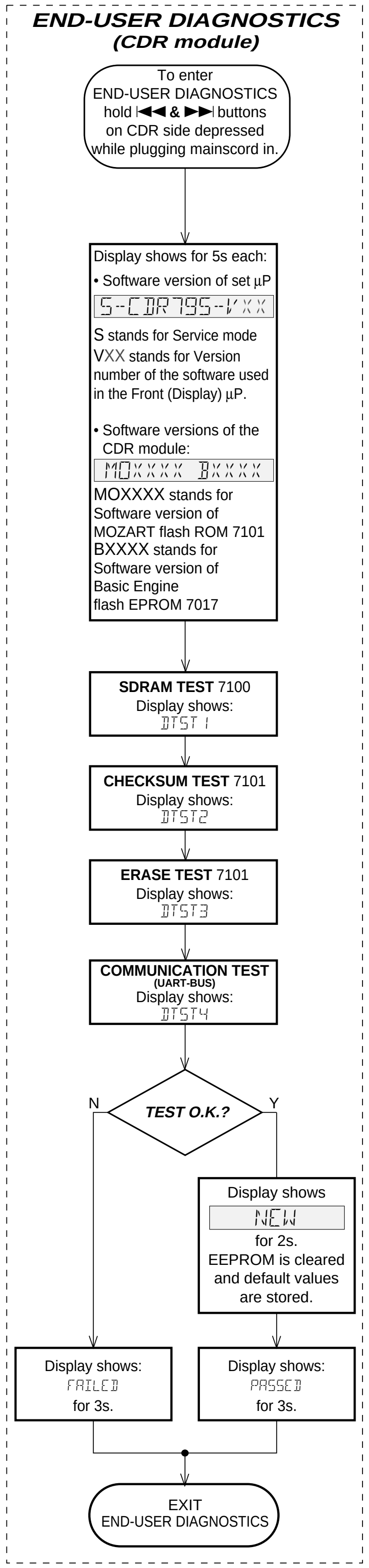


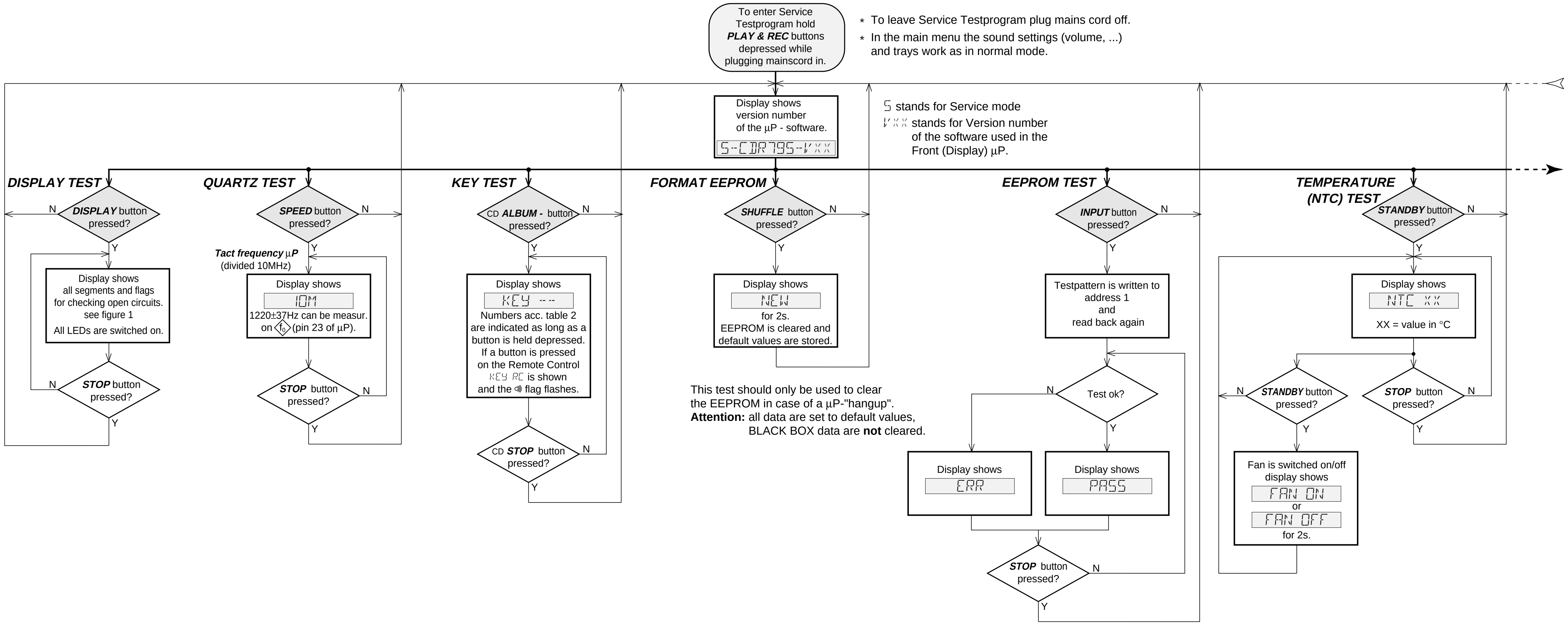
picture 34

Personal Notes:

SERVICE TESTPROGRAM

VARIOUS TESTS


END-USER DIAGNOSTICS
(CDR module)
To enter END-USER DIAGNOSTICS hold |◀◀ & ▶▶| buttons on CDR side depressed while plugging mainscord in.
Display shows for 5s each:
• Software version of set µP
S--CDR795--VXX
S stands for Service mode
VXX stands for Version number of the software used in the Front (Display) µP.
• Software versions of the CDR module:
MOXXXX BXXXX
MOXXXX stands for Software version of MOZART flash ROM 7101
BXXXX stands for Software version of Basic Engine flash EPROM 7017
SDRAM TEST 7100
Display shows:
DTST 1
CHECKSUM TEST 7101
Display shows:
DTST2
ERASE TEST 7101
Display shows:
DTST3
COMMUNICATION TEST
(UART-BUS)
Display shows:
DTST4
TEST O.K.?
N
Y
Display shows
NEW
for 2s.
EEPROM is cleared and default values are stored.
Display shows:
FAILED
for 3s.
Display shows:
PASSED
for 3s.
EXIT
END-USER DIAGNOSTICS


To enter Service Testprogram hold PLAY & REC buttons depressed while plugging mainscord in.
Display shows version number of the µP - software.
S--CDR795--VXX
DISPLAY TEST
DISPLAY button pressed?
N
Y
Display shows all segments and flags for checking open circuits. see figure 1
All LEDs are switched on.
STOP button pressed?
QUARTZ TEST
SPEED button pressed?
Tact frequency µP
(divided 10MHz)
Display shows
10M
1220±37Hz can be measur. on fo (pin 23 of µP).
STOP button pressed?
KEY TEST
CD ALBUM - button pressed?
Display shows
KEY --
Numbers acc. table 2 are indicated as long as a button is held depressed.
If a button is pressed on the Remote Control KEY RC is shown and the flag flashes.
CD STOP button pressed?
FORMAT EEPROM
SHUFFLE button pressed?
Display shows
NEW
for 2s.
EEPROM is cleared and default values are stored.
EEPROM TEST
INPUT button pressed?
Testpattern is written to address 1 and read back again
Test ok?
Display shows
ERR
Display shows
PASS
STOP button pressed?
TEMPERATURE (NTC) TEST
STANDBY button pressed?
Display shows
NTC XX
XX = value in °C
STANDBY button pressed?
STOP button pressed?
Fan is switched on/off display shows
FAN ON
or
FAN OFF
for 2s.

* To leave Service Testprogram plug mains cord off.
* In the main menu the sound settings (volume, ...) and trays work as in normal mode.

S stands for Service mode
VXX stands for Version number of the software used in the Front (Display) µP.

This test should only be used to clear the EEPROM in case of a µP-"hangup".
Attention: all data are set to default values, BLACK BOX data are **not** cleared.

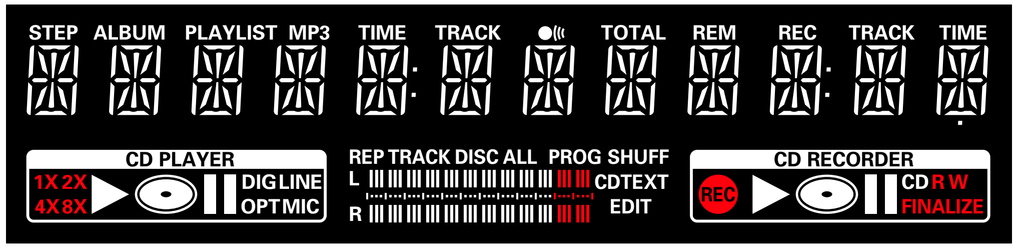

STEP
ALBUM
PLAYLIST
MP3
TIME
TRACK
TOTAL
REM
REC
TRACK
TIME
CD PLAYER
1X 2X
4X 8X
DIGLINE
OPTMIC
REP TRACK DISC ALL
PROG SHUFF
L
R
CDTEXT
EDIT
CD RECORDER
REC
CD R W
FINALIZE

fig. 1

KEY CODES

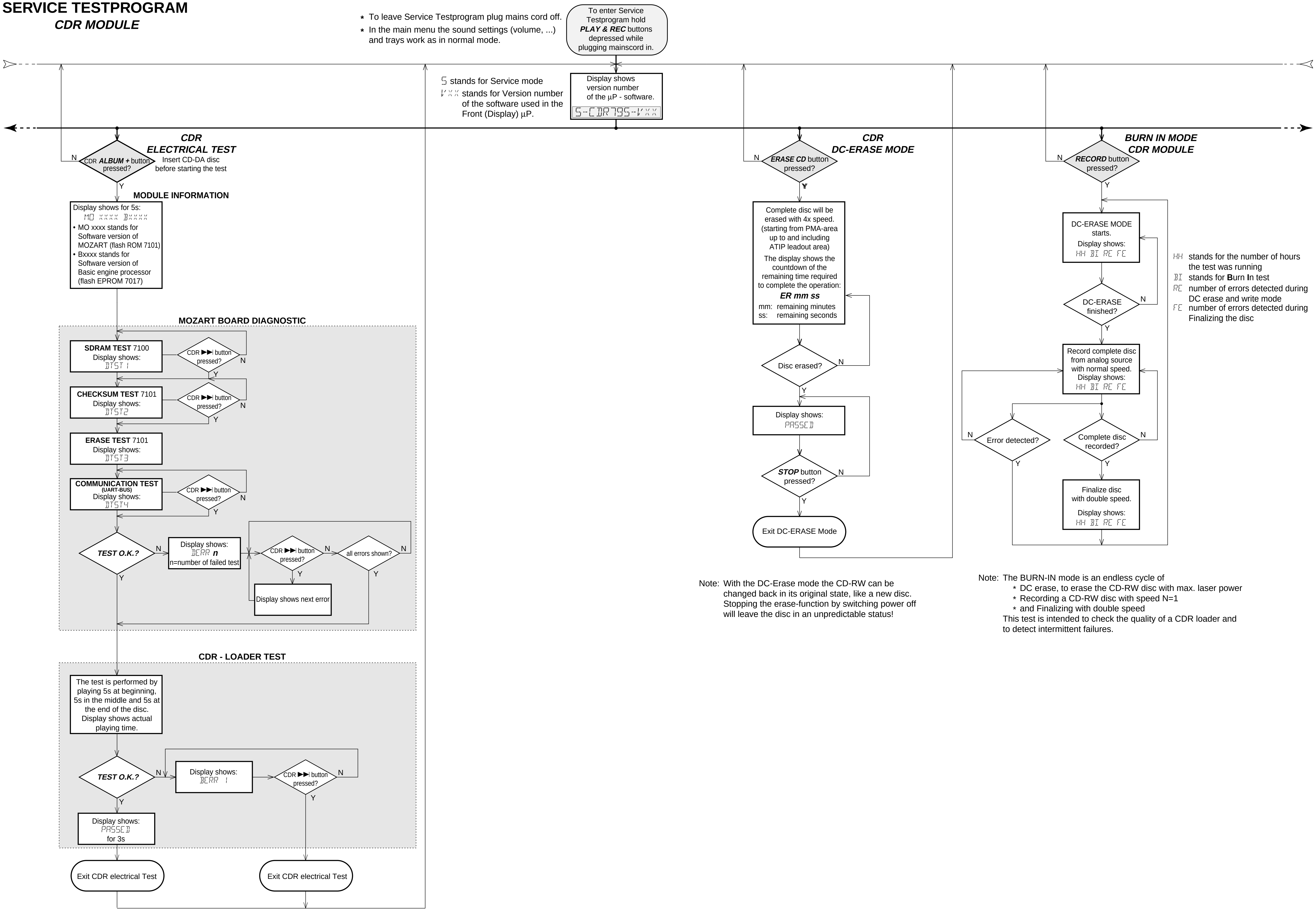
KEY	KEY CODE	KEY	KEY CODE
OPEN/CLOSE (CD)	0	ERASE CD	12
STANDBY	1	PLAY/PAUSE (CDR)	13
SPEED	2	STOP (CDR)	14
PLAY/PAUSE (CD)	3	ALBUM - (CDR)	15
STOP (CD)	4 (exit)	ALBUM + (CDR)	16
ALBUM - (CD)	5	|◀◀ (CDR)	17
ALBUM + (CD)	6	▶▶| (CDR)	18
|◀◀ (CD)	7	RECORD	19
▶▶| (CD)	8	COPY CD	20
DISPLAY	9	OPEN/CLOSE (CDR)	21
SHUFFLE	10		
INPUT	11		

table 2

SERVICE TESTPROGRAM

CDR MODULE

- ⋆ To leave Service Testprogram plug mains cord off.
- ⋆ In the main menu the sound settings (volume, ...) and trays work as in normal mode.


To enter Service Testprogram hold **PLAY & REC** buttons depressed while plugging mainscord in.
Display shows version number of the µP - software.
S-CDR795-Vxx
S stands for Service mode
Vxx stands for Version number of the software used in the Front (Display) µP.
CDR ELECTRICAL TEST
CDR **ALBUM +** button pressed?
Insert CD-DA disc before starting the test
N
Y
MODULE INFORMATION
Display shows for 5s:
MO xxxx Bxxxx
• MO xxxx stands for Software version of MOZART (flash ROM 7101)
• Bxxxx stands for Software version of Basic engine processor (flash EPROM 7017)
MOZART BOARD DIAGNOSTIC
SDRAM TEST 7100
Display shows:
DTST1
CDR ▶▶| button pressed?
N
Y
CHECKSUM TEST 7101
Display shows:
DTST2
CDR ▶▶| button pressed?
N
Y
ERASE TEST 7101
Display shows:
DTST3
COMMUNICATION TEST (UART-BUS)
Display shows:
DTST4
CDR ▶▶| button pressed?
N
Y
TEST O.K.?
N
Y
Display shows:
DERR n
n=number of failed test
CDR ▶▶| button pressed?
N
Y
all errors shown?
N
Y
Display shows next error
CDR - LOADER TEST
The test is performed by playing 5s at beginning, 5s in the middle and 5s at the end of the disc. Display shows actual playing time.
TEST O.K.?
N
Y
Display shows:
DERR 1
CDR ▶▶| button pressed?
N
Y
Display shows:
PASSED
for 3s
Exit CDR electrical Test
Exit CDR electrical Test
CDR DC-ERASE MODE
ERASE CD button pressed?
N
Y
Complete disc will be erased with 4x speed. (starting from PMA-area up to and including ATIP leadout area)
The display shows the countdown of the remaining time required to complete the operation:
ER mm ss
mm: remaining minutes
ss: remaining seconds
Disc erased?
N
Y
Display shows:
PASSED
STOP button pressed?
N
Y
Exit DC-ERASE Mode
BURN IN MODE CDR MODULE
RECORD button pressed?
N
Y
DC-ERASE MODE starts.
Display shows:
HH BI RE FE
DC-ERASE finished?
N
Y
Record complete disc from analog source with normal speed.
Display shows:
HH BI RE FE
Error detected?
N
Y
Complete disc recorded?
N
Y
Finalize disc with double speed.
Display shows:
HH BI RE FE

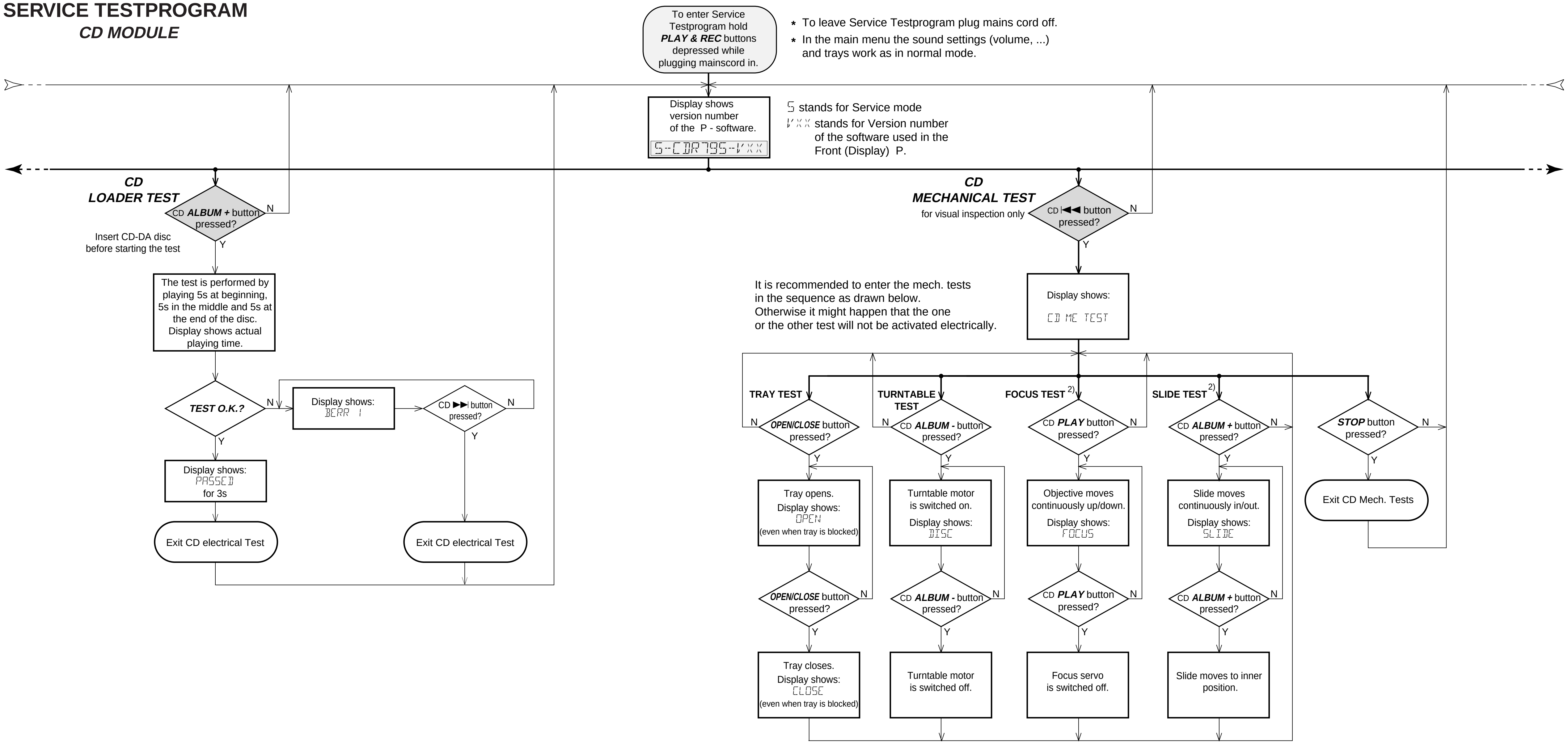
HH stands for the number of hours the test was running
BI stands for **B**urn **I**n test
RE number of errors detected during DC erase and write mode
FE number of errors detected during Finalizing the disc

Note: With the DC-Erase mode the CD-RW can be changed back in its original state, like a new disc. Stopping the erase-function by switching power off will leave the disc in an unpredictable status!

Note: The BURN-IN mode is an endless cycle of
- ⋆ DC erase, to erase the CD-RW disc with max. laser power
- ⋆ Recording a CD-RW disc with speed N=1
- ⋆ and Finalizing with double speed

This test is intended to check the quality of a CDR loader and to detect intermittent failures.

SERVICE TESTPROGRAM
CD MODULE



- To leave Service Testprogram plug mains cord off.
- In the main menu the sound settings (volume, ...) and trays work as in normal mode.

S stands for Service mode
Vxx stands for Version number of the software used in the Front (Display) P.

It is recommended to enter the mech. tests in the sequence as drawn below. Otherwise it might happen that the one or the other test will not be activated electrically.

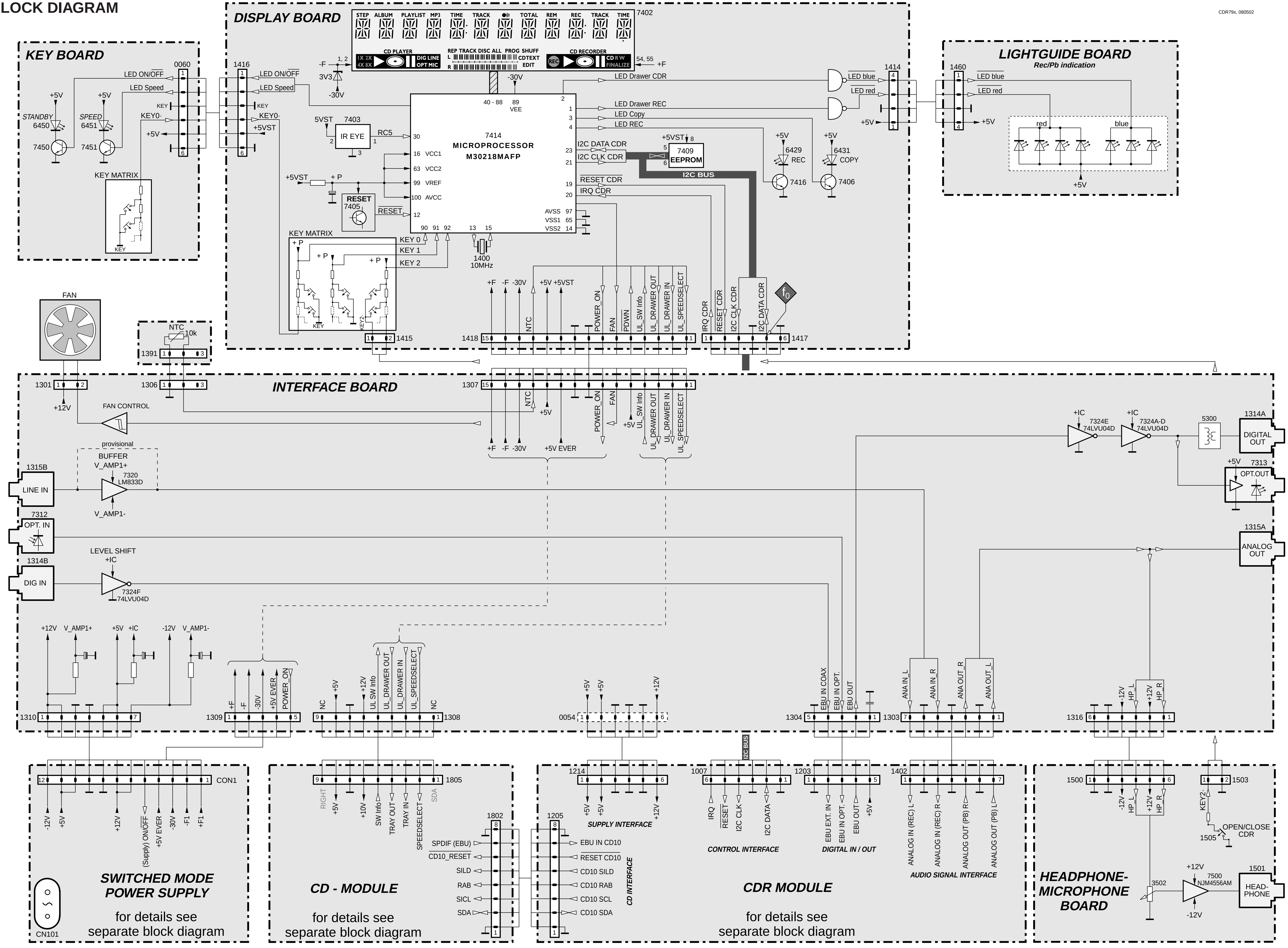
To enter Service Testprogram hold **PLAY & REC** buttons depressed while plugging mainscord in.
Display shows version number of the P - software.
S-CDR795-Vxx
CD LOADER TEST
CD ALBUM + button pressed?
N
Y
Insert CD-DA disc before starting the test
The test is performed by playing 5s at beginning, 5s in the middle and 5s at the end of the disc. Display shows actual playing time.
TEST O.K.?
N
Y
Display shows: BERR 1
CD ▶▶I button pressed?
N
Y
Display shows: PASSED for 3s
Exit CD electrical Test
Exit CD electrical Test
CD MECHANICAL TEST
for visual inspection only
CD I◀◀ button pressed?
N
Y
Display shows: CD ME TEST
TRAY TEST
TURNTABLE TEST
FOCUS TEST 2)
SLIDE TEST 2)
OPEN/CLOSE button pressed?
CD ALBUM - button pressed?
CD PLAY button pressed?
CD ALBUM + button pressed?
STOP button pressed?
Tray opens. Display shows: OPEN (even when tray is blocked)
Turntable motor is switched on. Display shows: DISC
Objective moves continuously up/down. Display shows: FOCUS
Slide moves continuously in/out. Display shows: SLIDE
Exit CD Mech. Tests
OPEN/CLOSE button pressed?
CD ALBUM - button pressed?
CD PLAY button pressed?
CD ALBUM + button pressed?
Tray closes. Display shows: CLOSE (even when tray is blocked)
Turntable motor is switched off.
Focus servo is switched off.
Slide moves to inner position.

---

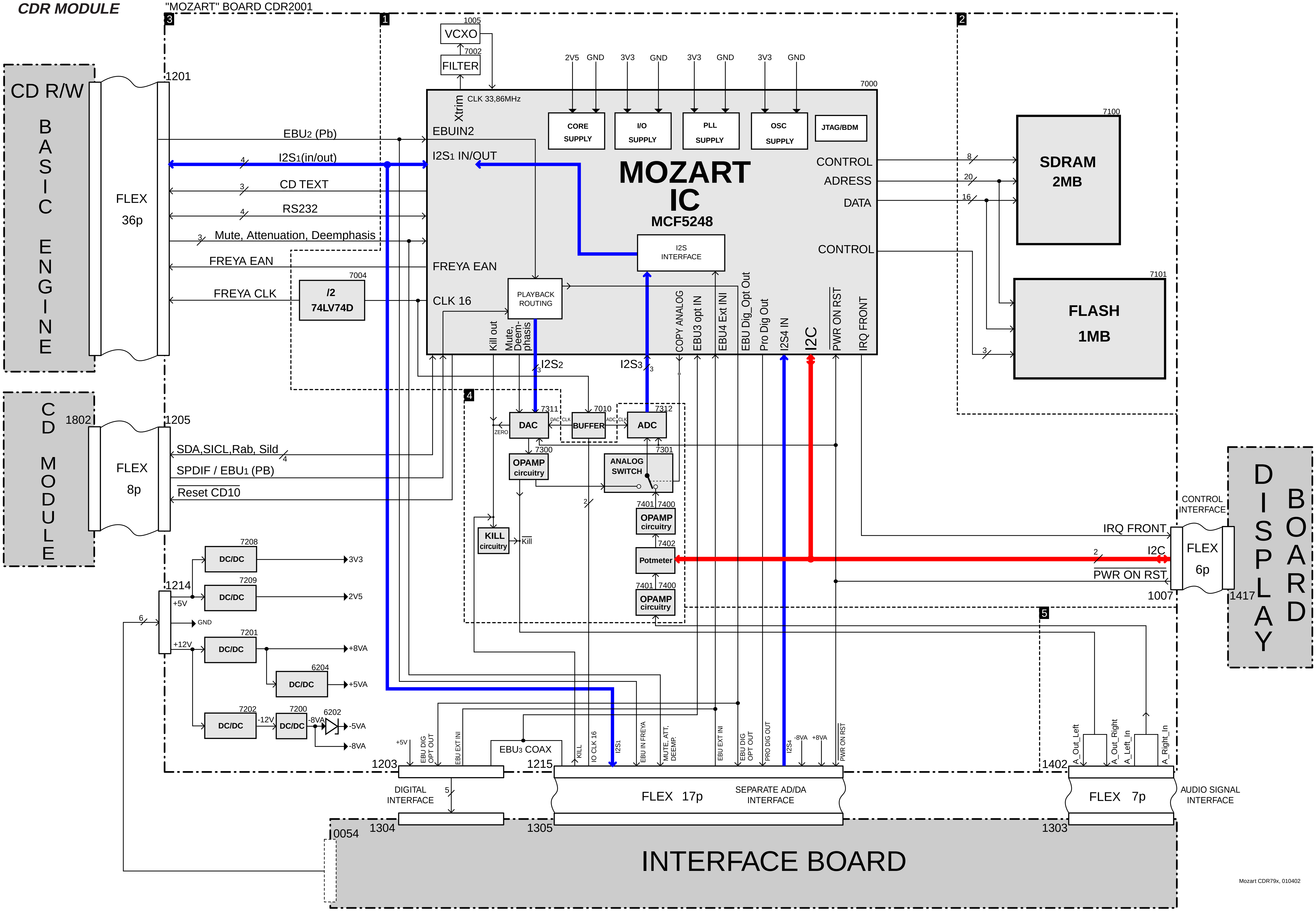
[2] Move slide manually backwards to get view of the pickup.

BLOCK DIAGRAM

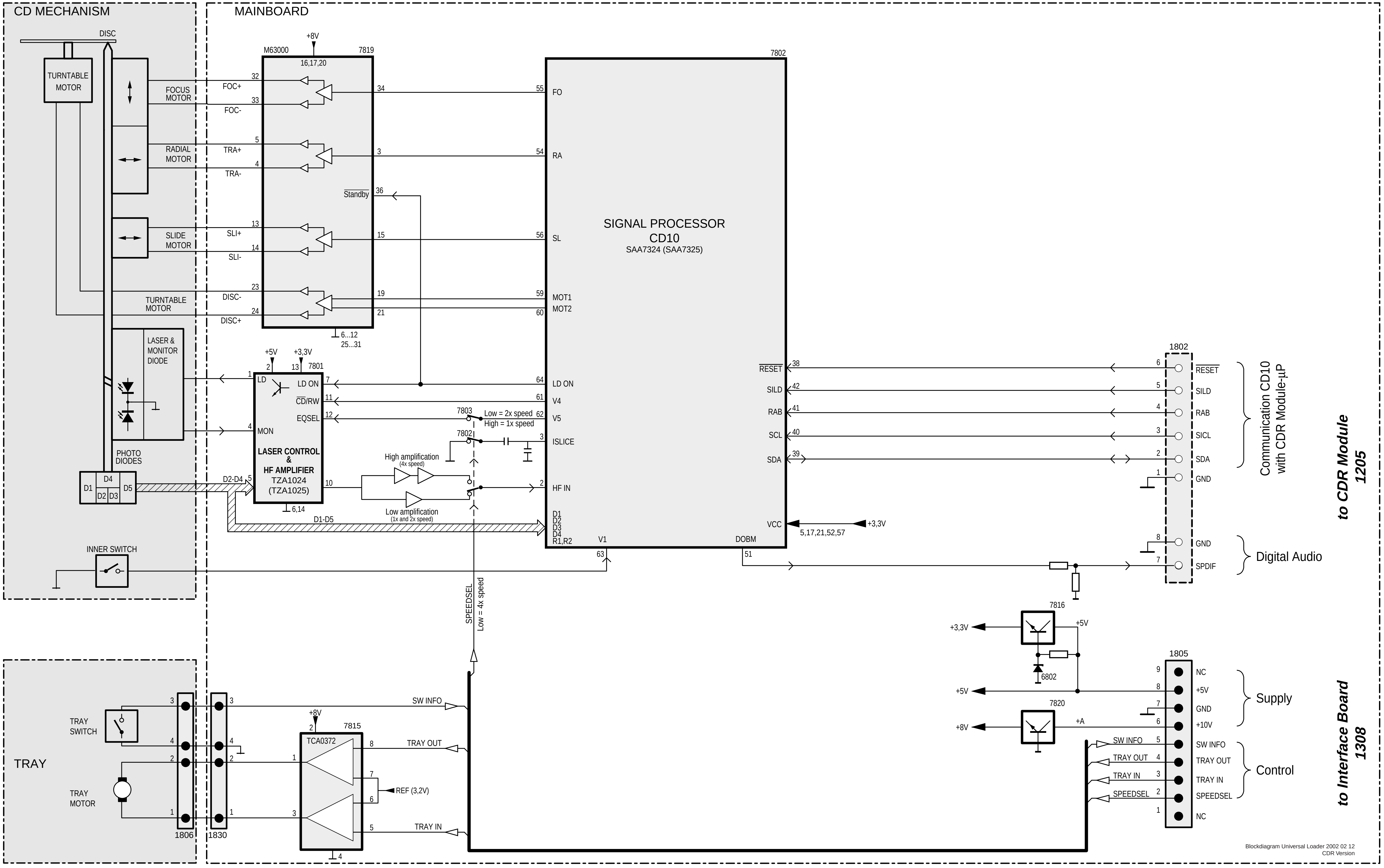
CDR79x, 080502


DISPLAY BOARD
7402
STEP ALBUM PLAYLIST MP3 TIME TRACK TOTAL REM REC TRACK TIME
CD PLAYER
REP TRACK DISC ALL PROG SHUFF CDTEXT EDIT
CD RECORDER
DIG LINE OPT MIC
CD RW FINALIZE
-F 1, 2 3V3 -30V
54, 55 +F
KEY BOARD
0060
LED ON/OFF
LED Speed
KEY
KEY0
+5V
STANDBY 6450
SPEED 6451
7450 7451
KEY MATRIX
1416
+5VST
5VST 7403 IR EYE RC5
7414 MICROPROCESSOR M30218MAFP
40 - 88 89 VEE
VCC1 VCC2 VREF AVCC
AVSS VSS1 VSS2
RESET 7405
KEY 0 KEY 1 KEY 2
1400 10MHz
LED Drawer CDR
LED Drawer REC
LED Copy
LED REC
I2C DATA CDR
I2C CLK CDR
+5VST 7409 EEPROM
I2C BUS
RESET CDR
IRQ CDR
LED blue
LED red
6429 REC 7416
6431 COPY 7406
1414
LIGHTGUIDE BOARD
Rec/Pb indication
1460
red blue
+5V
FAN
NTC 10k
1391
1415
1418
+F -F -30V NTC +5V +5VST
POWER_ON FAN PDWN UL_SW Info UL_DRAWER OUT UL_DRAWER IN UL_SPEEDSELECT
IRQ CDR RESET CDR I2C CLK CDR I2C DATA CDR
1417
INTERFACE BOARD
1301 1306 1307
+12V
FAN CONTROL
+5V EVER
provisional
BUFFER V_AMP1+ 7320 LM833D V_AMP1-
1315B LINE IN
7312 OPT. IN
LEVEL SHIFT +IC
1314B DIG IN
7324F 74LVU04D
+IC 7324E 74LVU04D
+IC 7324A-D 74LVU04D
5300
1314A DIGITAL OUT
+5V 7313 OPT.OUT
1315A ANALOG OUT
+12V V_AMP1+ +5V +IC -12V V_AMP1-
1310 1309 1308 0054 1304 1303 1316
NC +5V +12V UL SW Info UL_DRAWER OUT UL_DRAWER IN UL_SPEEDSELECT NC
EBU IN COAX EBU IN OPT. EBU OUT
ANA IN_L ANA IN_R ANA OUT_R ANA OUT_L
-12V HP_L +12V HP_R
CON1
-12V +5V +12V (Supply) ON/OFF +5V EVER -30V -F1 +F1
SWITCHED MODE POWER SUPPLY
for details see separate block diagram
CN101
1805
RIGHT +5V +10V SW Info TRAY OUT TRAY IN SPEEDSELECT SDA
1802
SPDIF (EBU) CD10_RESET SILD RAB SICL SDA
CD - MODULE
for details see separate block diagram
1205
EBU IN CD10 RESET CD10 CD10 SILD CD10 RAB CD10 SCL CD10 SDA
CD INTERFACE
1214 SUPPLY INTERFACE
1007 IRQ RESET I2C CLK I2C DATA CONTROL INTERFACE
1203 EBU EXT. IN EBU IN OPT. EBU OUT +5V DIGITAL IN / OUT
1402 ANALOG IN (REC) L ANALOG IN (REC) R ANALOG OUT (PB) R ANALOG OUT (PB) L AUDIO SIGNAL INTERFACE
CDR MODULE
for details see separate block diagram
1500 1503
KEY2 OPEN/CLOSE CDR 1505
HEADPHONE-MICROPHONE BOARD
3502
+12V 7500 NJM4556AM -12V
1501 HEAD-PHONE

BLOCK DIAGRAM
CDR MODULE

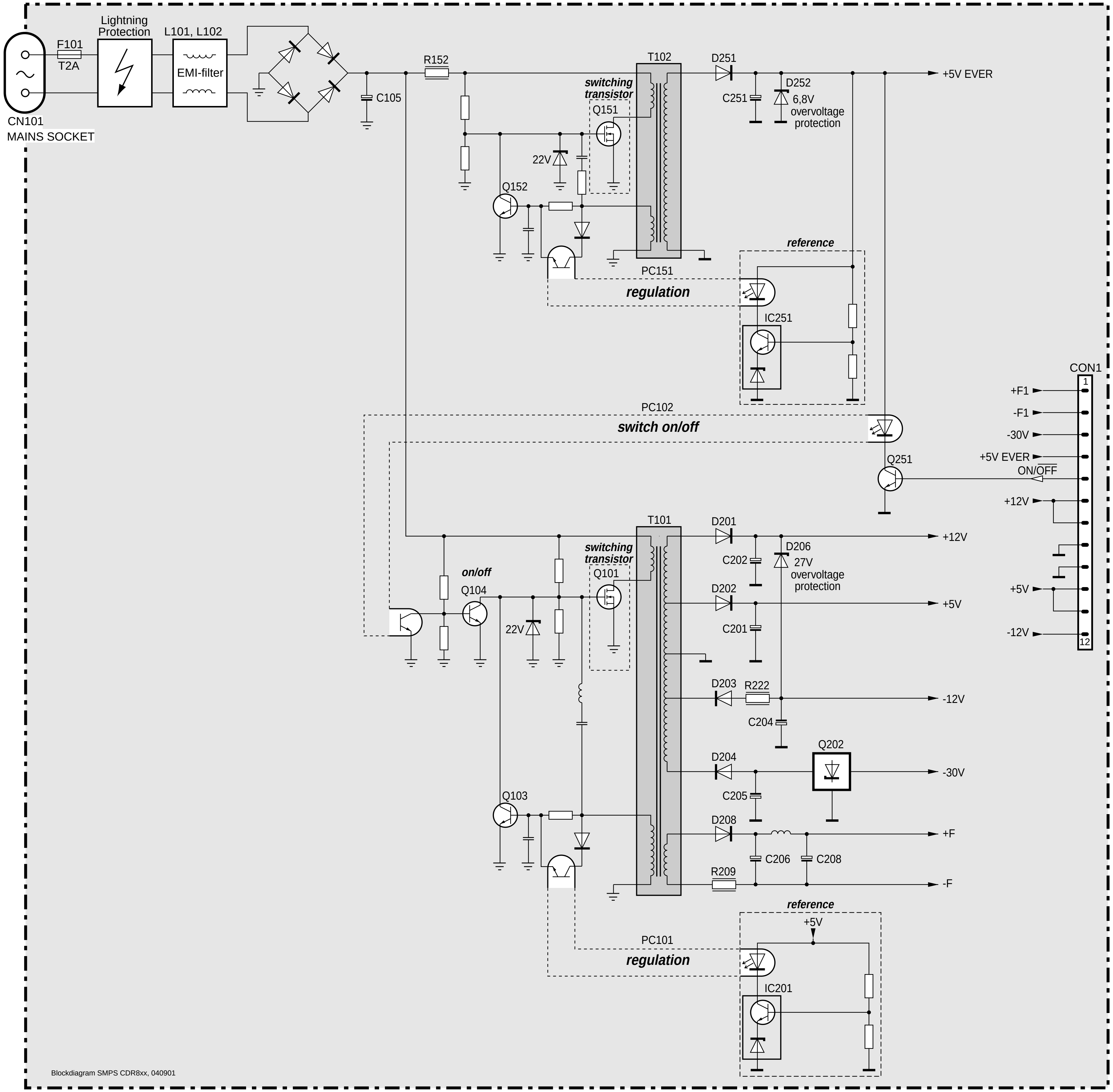

"MOZART" BOARD CDR2001
3
1
2
4
5
CD R/W
BASIC ENGINE
FLEX 36p
1201
CD MODULE
1802
FLEX 8p
1205
VCXO
1005
FILTER
7002
Xtrim
CLK 33,86MHz
2V5
GND
3V3
GND
3V3
GND
3V3
GND
7000
CORE SUPPLY
I/O SUPPLY
PLL SUPPLY
OSC SUPPLY
JTAG/BDM
MOZART IC
MCF5248
EBUIN2
I2S1 IN/OUT
FREYA EAN
CLK 16
I2S INTERFACE
PLAYBACK ROUTING
CONTROL
ADRESS
DATA
CONTROL
Kill out
Mute, Deem-phasis
COPY ANALOG
EBU3 opt IN
EBU4 Ext INI
EBU Dig_Opt Out
Pro Dig Out
I2S4 IN
I2C
PWR ON RST
IRQ FRONT
EBU2 (Pb)
I2S1(in/out)
CD TEXT
RS232
Mute, Attenuation, Deemphasis
FREYA EAN
FREYA CLK
/2
74LV74D
7004
SDA,SICL,Rab, Sild
SPDIF / EBU1 (PB)
Reset CD10
SDRAM 2MB
7100
FLASH 1MB
7101
8
20
16
3
I2S2
I2S3
DAC
7311
BUFFER
7010
ADC
7312
ZERO
DAC CLK
ADC CLK
OPAMP circuitry
7300
ANALOG SWITCH
7301
7401 7400
OPAMP circuitry
7402
Potmeter
KILL circuitry
Kill
DISPLAY BOARD
CONTROL INTERFACE
FLEX 6p
IRQ FRONT
I2C
PWR ON RST
1007
1417
DC/DC 7208 +3V3
DC/DC 7209 +2V5
DC/DC 7201 +8VA
DC/DC 6204 +5VA
DC/DC 7202 -12V
DC/DC 7200 -8VA
6202 -5VA
-8VA
1214
+5V
GND
+12V
6
+5V
EBU DIG OPT OUT
EBU EXT INI
EBU3 COAX
KILL
IO CLK 16
I2S1
EBU IN FREYA
MUTE, ATT, DEEMP.
EBU EXT INI
EBU DIG OPT OUT
PRO DIG OUT
I2S4
-8VA
+8VA
PWR ON RST
A_Out_Left
A_Out_Right
A_Left_In
A_Right_In
1203
1215
1402
DIGITAL INTERFACE
5
FLEX 17p
SEPARATE AD/DA INTERFACE
FLEX 7p
AUDIO SIGNAL INTERFACE
1304
1305
1303
0054
INTERFACE BOARD
Mozart CDR79x, 010402

BLOCK DIAGRAM
CD MODULE

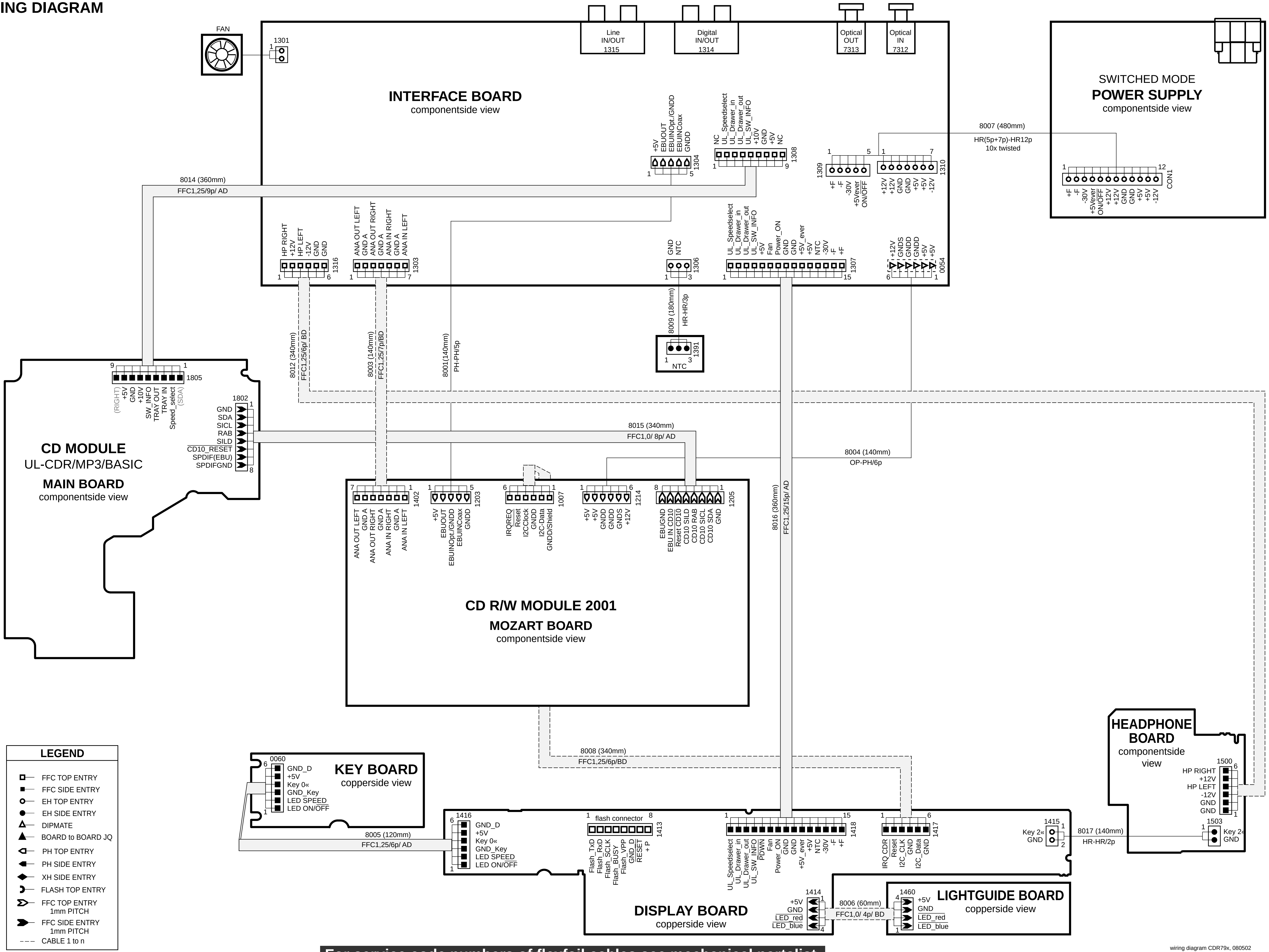

CD MECHANISM
MAINBOARD
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
SLIDE MOTOR
TURNTABLE MOTOR
LASER & MONITOR DIODE
PHOTO DIODES
D1
D4
D2
D3
D5
INNER SWITCH
FOC+
FOC-
TRA+
TRA-
SLI+
SLI-
DISC-
DISC+
+8V
M63000
7819
16,17,20
32
33
5
4
13
14
23
24
34
3
Standby
36
15
19
21
6...12
25...31
+5V
+3,3V
2
13
7801
LD
LD ON
CD/RW
EQSEL
MON
LASER CONTROL
&
HF AMPLIFIER
TZA1024
(TZA1025)
6,14
D2-D4
D1-D5
10
High amplification
(4x speed)
Low amplification
(1x and 2x speed)
7803
Low = 2x speed
High = 1x speed
7802
SPEEDSEL
Low = 4x speed
7802
SIGNAL PROCESSOR
CD10
SAA7324 (SAA7325)
55 FO
54 RA
56 SL
59 MOT1
60 MOT2
64 LD ON
61 V4
62 V5
3 ISLICE
2 HF IN
D1 D2 D3 D4 R1,R2
V1
63
DOBM
51
VCC
5,17,21,52,57
+3,3V
RESET 38
SILD 42
RAB 41
SCL 40
SDA 39
1802
6 RESET
5 SILD
4 RAB
3 SICL
2 SDA
1 GND
8 GND
7 SPDIF
Communication CD10 with CDR Module-µP
Digital Audio
to CDR Module 1205
7816
+3,3V
+5V
6802
1805
9 NC
8 +5V
7 GND
6 +10V
5 SW INFO
4 TRAY OUT
3 TRAY IN
2 SPEEDSEL
1 NC
Supply
Control
7820
+8V
+A
+5V
to Interface Board 1308
TRAY
TRAY SWITCH
TRAY MOTOR
1806
1830
3
4
2
1
SW INFO
+8V
7815
TCA0372
TRAY OUT
REF (3,2V)
TRAY IN
8
7
6
5
4
Blockdiagram Universal Loader 2002 02 12
CDR Version

BLOCK DIAGRAM
POWER SUPPLY

BLOCK DIAGRAM
SWITCHED MODE POWER SUPPLY / European & USA version (/00 & /17)


F101
T2A
Lightning Protection
L101, L102
EMI-filter
CN101
MAINS SOCKET
C105
R152
switching transistor
Q151
22V
Q152
T102
D251
C251
D252
6,8V overvoltage protection
+5V EVER
reference
PC151
regulation
IC251
PC102
switch on/off
Q251
CON1
1
12
+F1
-F1
-30V
+5V EVER
ON/OFF
+12V
+5V
-12V
T101
D201
+12V
C202
D206
27V overvoltage protection
switching transistor
Q101
on/off
Q104
22V
D202
+5V
C201
D203
R222
-12V
C204
Q202
D204
-30V
C205
Q103
D208
+F
C206
C208
R209
-F
reference
+5V
PC101
regulation
IC201
Blockdiagram SMPS CDR8xx, 040901

WIRING DIAGRAM

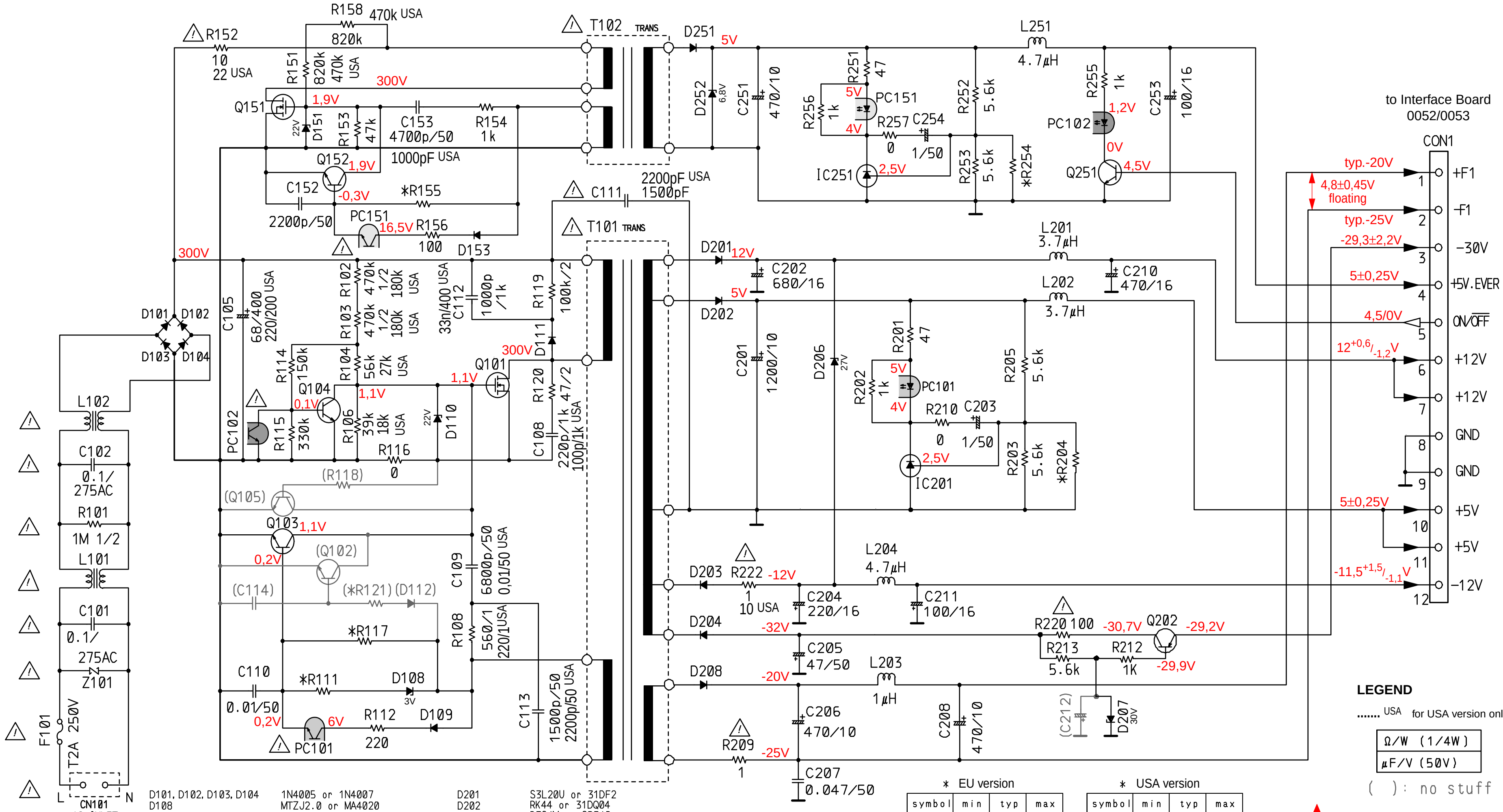

FAN
1301
1
Line IN/OUT 1315
Digital IN/OUT 1314
Optical OUT 7313
Optical IN 7312
INTERFACE BOARD
componentside view
+5V
EBUOUT
EBUINOpt./GNDD
EBUINCoax
GNDD
1304
NC
UL_Speedselect
UL_Drawer_in
UL_Drawer_out
UL_SW_INFO
+10V
GND
+5V
NC
1308
1309
+F
-F
-30V
+5Vever
ON/OFF
1310
+12V
+12V
GND
GND
+5V
+5V
-12V
8007 (480mm)
HR(5p+7p)-HR12p
10x twisted
SWITCHED MODE
POWER SUPPLY
componentside view
CON1
+F
-F
-30V
+5Vever
ON/OFF
+12V
+12V
GND
GND
+5V
+5V
-12V
8014 (360mm)
FFC1,25/9p/ AD
HP RIGHT
+12V
HP LEFT
-12V
GND
GND
1316
ANA OUT LEFT
GND A
ANA OUT RIGHT
GND A
ANA IN RIGHT
GND A
ANA IN LEFT
1303
GND
NTC
1306
UL_Speedselect
UL_Drawer_in
UL_Drawer_out
UL_SW_INFO
+5V
Fan
Power_ON
GND
GND
+5V_ever
+5V
NTC
-30V
-F
+F
1307
+12V
GNDS
GNDD
GNDD
+5V
+5V
0054
8012 (340mm)
FFC1,25/6p/ BD
8003 (140mm)
FFC1,25/7p/BD
8001(140mm)
PH-PH/5p
8009 (180mm)
HR-HR/3p
1391
NTC
1805
(RIGHT)
+5V
GND
+10V
SW_INFO
TRAY OUT
TRAY IN
Speed_select
(SDA)
1802
GND
SDA
SICL
RAB
SILD
CD10_RESET
SPDIF(EBU)
SPDIFGND
CD MODULE
UL-CDR/MP3/BASIC
MAIN BOARD
componentside view
8015 (340mm)
FFC1,0/ 8p/ AD
8004 (140mm)
OP-PH/6p
8016 (360mm)
FFC1,25/15p/ AD
1402
ANA OUT LEFT
GND A
ANA OUT RIGHT
GND A
ANA IN RIGHT
GND A
ANA IN LEFT
1203
+5V
EBUOUT
EBUINOpt./GNDD
EBUINCoax
GNDD
1007
IRQREQ
Reset
I2CClock
GNDD
I2C-Data
GNDD/Shield
1214
+5V
+5V
GNDD
GNDD
GNDS
+12V
1205
EBUGND
EBU IN CD10
Reset CD10
CD10 SILD
CD10 RAB
CD10 SICL
CD10 SDA
GND
CD R/W MODULE 2001
MOZART BOARD
componentside view
8008 (340mm)
FFC1,25/6p/BD
HEADPHONE
BOARD
componentside
view
1500
HP RIGHT
+12V
HP LEFT
-12V
GND
GND
1503
Key 2«
GND
LEGEND
FFC TOP ENTRY
FFC SIDE ENTRY
EH TOP ENTRY
EH SIDE ENTRY
DIPMATE
BOARD to BOARD JQ
PH TOP ENTRY
PH SIDE ENTRY
XH SIDE ENTRY
FLASH TOP ENTRY
FFC TOP ENTRY
1mm PITCH
FFC SIDE ENTRY
1mm PITCH
CABLE 1 to n
0060
GND_D
+5V
Key 0«
GND_Key
LED SPEED
LED ON/OFF
KEY BOARD
copperside view
8005 (120mm)
FFC1,25/6p/ AD
1416
GND_D
+5V
Key 0«
GND_Key
LED SPEED
LED ON/OFF
flash connector
1413
Flash_TxD
Flash_RxD
Flash_SCLK
Flash_BUSY
Flash_VPP
GND_D
RESET
+ P
1418
UL_Speedselect
UL_Drawer_in
UL_Drawer_out
UL_SW_INFO
PDWN
Fan
Power_ON
GND
GND
+5V_ever
+5V
NTC
-30V
-F
+F
1417
IRQ_CDR
Reset
I2C_CLK
GND
I2C_Data
GND
1415
Key 2«
GND
8017 (140mm)
HR-HR/2p
DISPLAY BOARD
copperside view
1414
+5V
GND
LED_red
LED_blue
8006 (60mm)
FFC1,0/ 4p/ BD
1460
+5V
GND
LED_red
LED_blue
LIGHTGUIDE BOARD
copperside view

For service code numbers of flexfoil cables see mechanical partslist.

wiring diagram CDR79x, 080502

Switched Mode Power Supply / EU + USA version (/00/17)

for orientation only


to Interface Board
0052/0053
CON1
+F1
-F1
-30V
+5V.EVER
ON/OFF
+12V
+12V
GND
GND
+5V
+5V
-12V
T101 TRANS
T102 TRANS
CN101
AC INLET
F101 T2A 250V

D101, D102, D103, D104	1N4005 or 1N4007	D201	S3L20U or 31DF2
D108	MTZJ2.0 or MA4020	D202	RK44 or 31DQ04 D3S4M or SB340
D109, D153	1SS133 or MA165 or 1SS119	D203, D204	AG01A or AU02Z or PR1005
D110, D151	MTZJ22 or MA4220	D206	RD27F or MA2270
D111	EG01C or UF4007	D207	MA4300 or MTZJ30
Q101	2SK2128 or 2SK2647	D208	AK04 or AG01A DINL20U or AU02Z
Q102, Q103, Q104, Q105	2SC1741 or 2SD1858 or 2SC4040	D251	AU02Z or D1NL20U
Q151	2SK2128	D252	MTZJ6.8 or MA4068
Q152	2SC1740	IC201, IC251	MM1431AT or AN1431T
PC101, PC102, PC151	ON3171 or PC123 TECT1103 or SFH615A	Q202	2PA1015 or 2SA933AS or 2SA1015
		Q251	UN4211 or DTC114ESA

∗ EU version

symbol	min	typ	max
∗R111	3.3k	4.7k	6.8k
∗R117	15k	27k	OPEN
∗R121	—	—	—
∗R155	15k	27k	56k
∗R204	39k	68k	OPEN
∗R254	39k	68k	OPEN

∗ USA version

symbol	min	typ	max
∗R111	2.2k	3.9k	5.6k
∗R117	22k	47k	OPEN
∗R121	—	—	—
∗R155	22k	33k	56k
∗R204	39k	68k	OPEN
∗R254	39k	68k	OPEN

LEGEND

.... USA for USA version only

Ω/W (1/4W)
µF/V (50V)

( ) : no stuff

...V DC VOLTAGES MEASURED IN *STOP MODE*
UNLESS STATED OTHERWISE
MAINS VOLTAGE 230V (120V USA)
PRIMARY MEASURED AGAINST
JUNCTION D103/D104

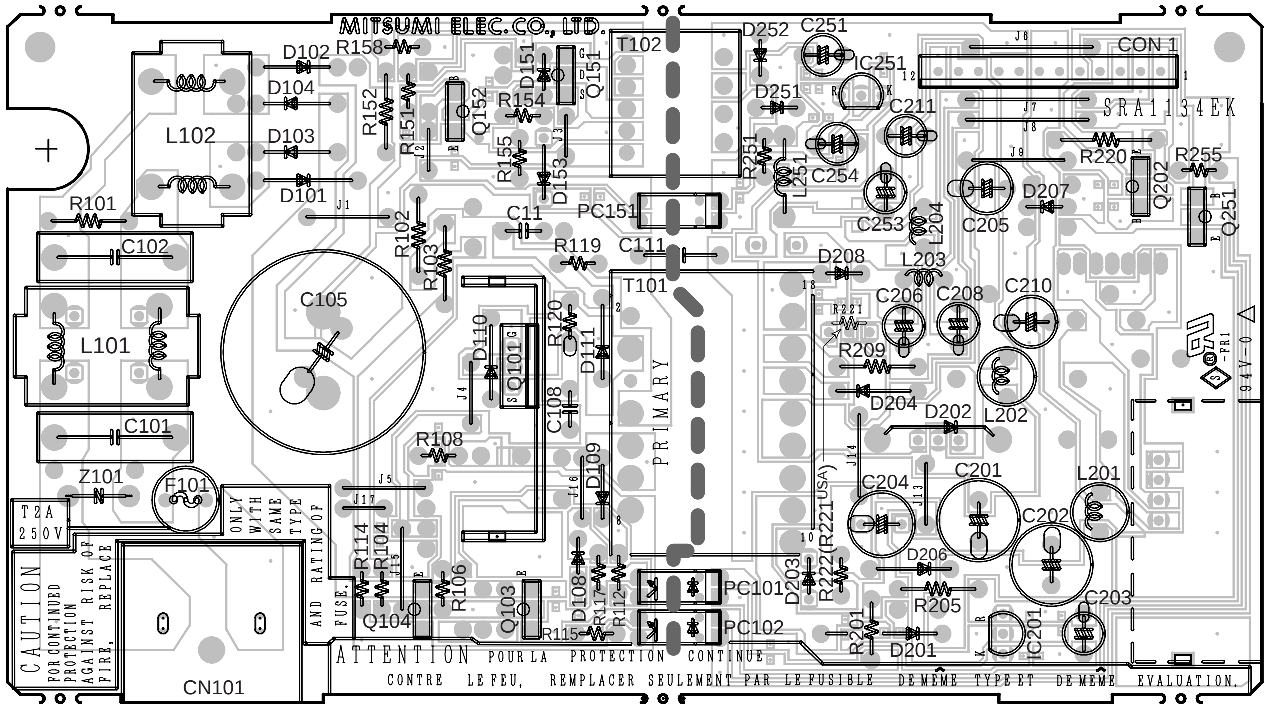
EVM

Switched Mode Power Supply, EU+USA versions, 300701
(SRA1134EK+SRA1133UC combined)

POWER BOARD / component side view

USA and European version

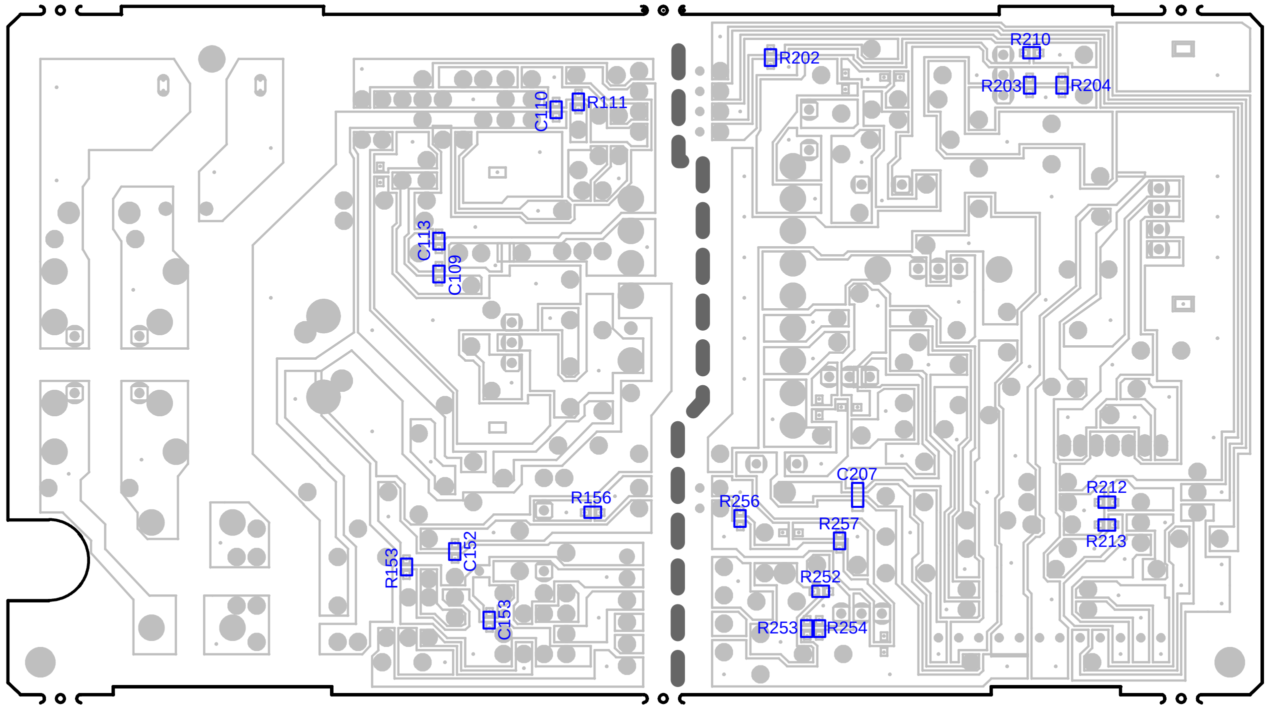
SMPS CDR8xx,EU+USA, 300701
SRA1134EK+SRA1133UC


MITSUMI ELEC.CO, LTD.
CON 1
SRA1134EK
T102
T101
PRIMARY
L101
L102
C105
CN101
F101
T2A 250V
CAUTION FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.
ATTENTION POUR LA PROTECTION CONTINUE CONTRE LE FEU, REMPLACER SEULEMENT PAR LE FUSIBLE DE MEME TYPE ET DE MEME EVALUATION.

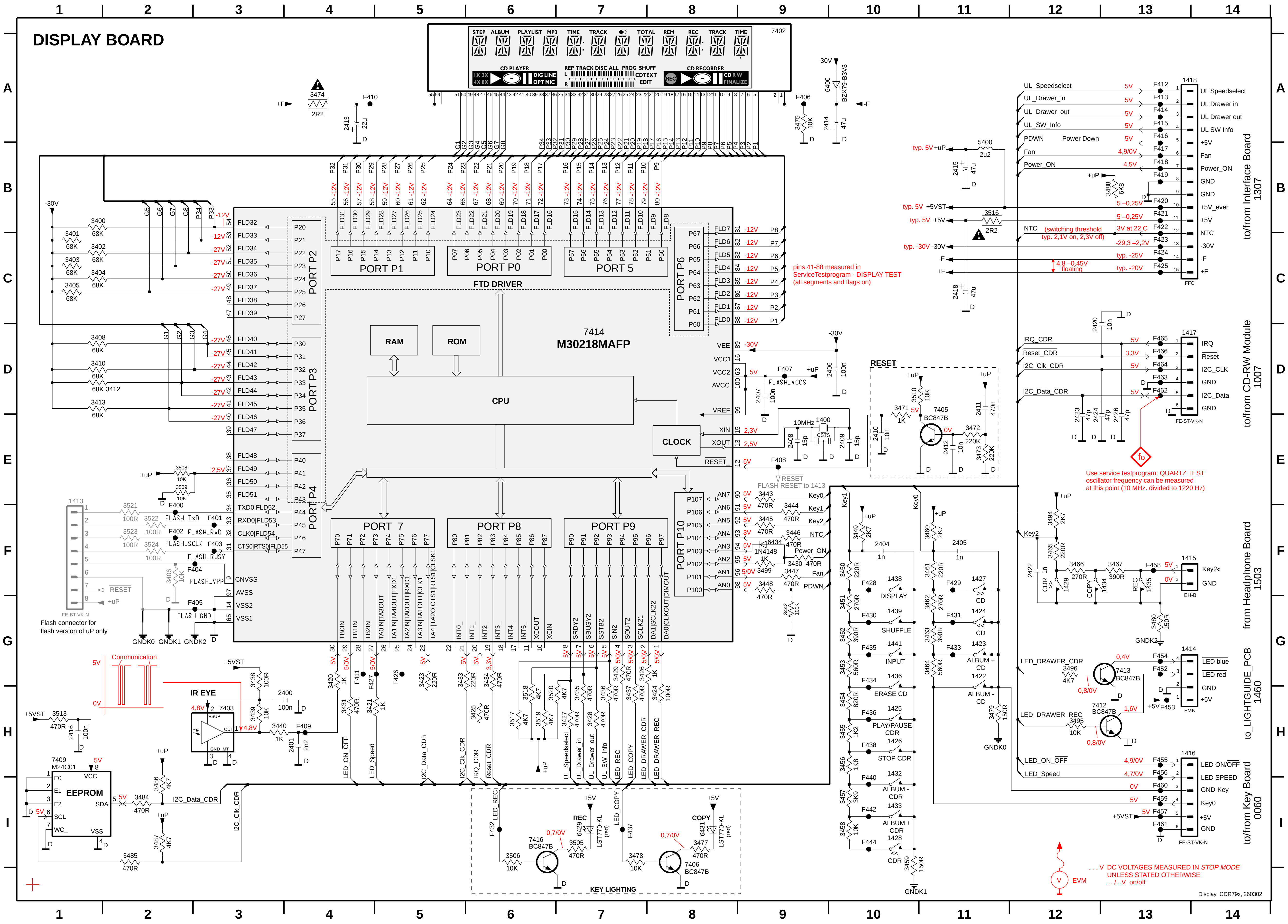
POWER BOARD / copper side view

USA and European version

SMPS CDR8xx,EU+USA, 300701
SRA1134EK+SRA1133UC

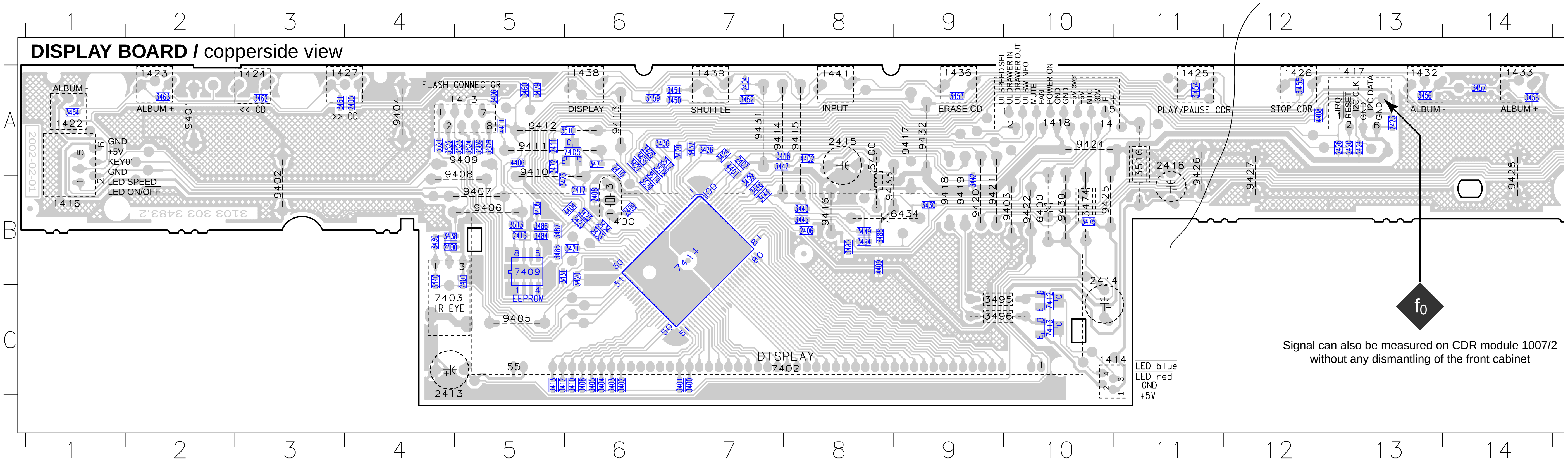

R202
R210
R203
R204
R111
C110
C113
C109
R156
R256
C207
R212
R213
R257
R252
R253
R254
R153
C152
C153

DISPLAY BOARD


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I
7402
STEP ALBUM PLAYLIST MP3 TIME TRACK TOTAL REM REC TRACK TIME
CD PLAYER
REP TRACK DISC ALL PROG SHUFF
CDTEXT
EDIT
CD RECORDER
DIG LINE
OPT MIC
CD R W
FINALIZE
7414
M30218MAFP
RAM
ROM
CPU
CLOCK
FTD DRIVER
PORT P1
PORT P0
PORT 5
PORT P6
PORT P2
PORT P3
PORT P4
PORT 7
PORT P8
PORT P9
PORT P10
VEE
VCC1
VCC2
AVCC
VREF
XIN
XOUT
RESET
CNVSS
AVSS
VSS2
VSS1
10MHz 1400
CSTS
RESET
7405
BC847B
pins 41-88 measured in
ServiceTestprogram - DISPLAY TEST
(all segments and flags on)
FLASH RESET to 1413
1413
Flash connector for
flash version of uP only
Communication
IR EYE
7403
7409
M24C01
EEPROM
KEY LIGHTING
REC
COPY
7416
BC847B
7406
BC847B
LST770-KL
(red)
NTC (switching threshold
typ. 2,1V on, 2,3V off)
3V at 22 C
4,8 –0,45V
floating
typ. 5V +uP
typ. 5V +5VST
typ. 5V +5V
typ. -30V -30V
1418
FFC
to/from Interface Board
1307
1417
FE-ST-VK-N
to/from CD-RW Module
1007
Use service testprogram: QUARTZ TEST
oscillator frequency can be measured
at this point (10 MHz. divided to 1220 Hz)
fo
1415
EH-B
from Headphone Board
1503
1414
FMN
to_LIGHTGUIDE_PCB
1460
7413
BC847B
7412
BC847B
1416
FE-ST-VK-N
to/from Key Board
0060
DISPLAY
SHUFFLE
INPUT
ERASE CD
PLAY/PAUSE
CDR
STOP CDR
ALBUM - CDR
ALBUM + CDR
CDR
CD
ALBUM + CD
ALBUM - CD
. . . V DC VOLTAGES MEASURED IN STOP MODE
UNLESS STATED OTHERWISE
. . . /. . .V on/off
EVM
Display CDR79x, 260302

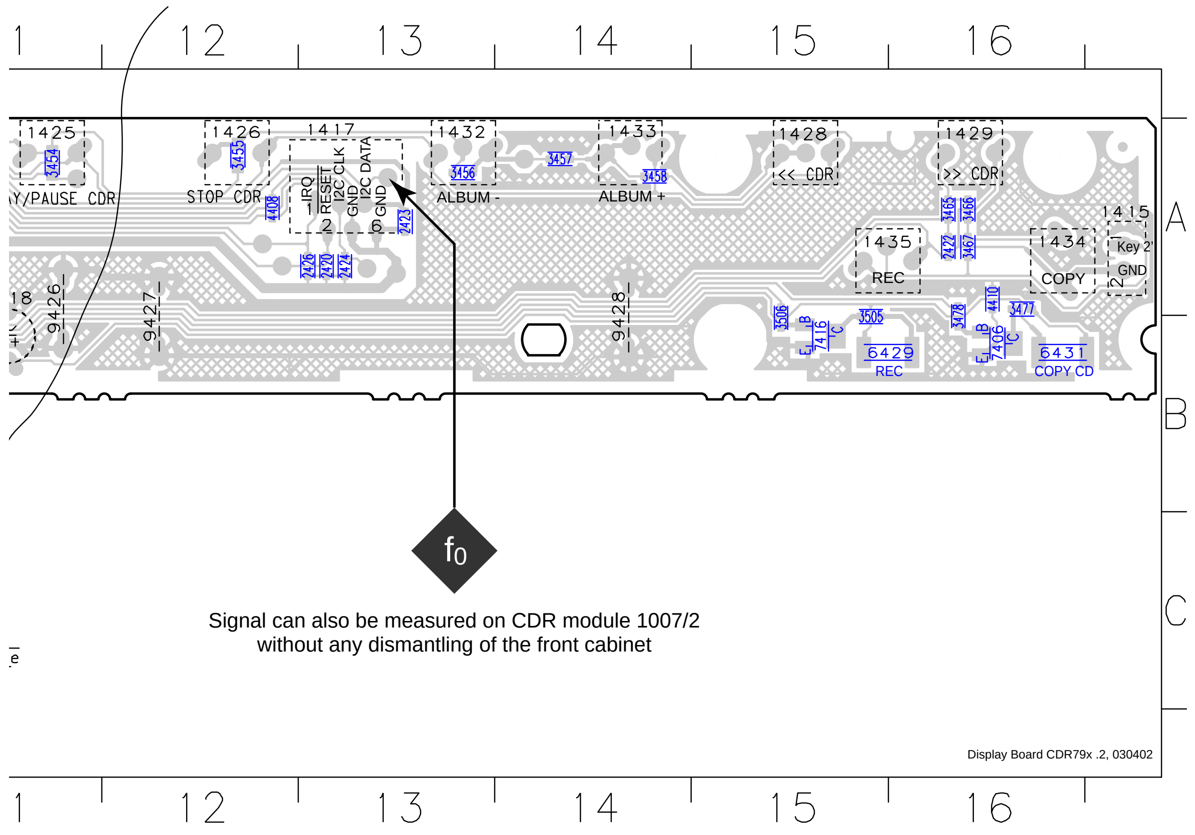
1400	E9
1413	F1
1414	G13
1415	F13
1416	H13
1417	D13
1418	A13
1422	G11
1423	G11
1424	G11
1425	H10
1426	H10
1427	F11
1428	I10
1429	F12
1432	H10
1433	I10
1434	F13
1435	F13
1436	G10
1438	F10
1439	G10
1441	G10
2400	H4
2401	H4
2404	F10
2405	F11
2406	D10
2407	D9
2408	E9
2409	E10
2410	E10
2411	D11
2412	E11
2413	A4
2414	A9
2415	B11
2416	H1
2418	C11
2420	D12
2422	F12
2423	E12
2424	D12
2426	D13
3400	B1
3401	C1
3402	C1
3403	C1
3404	C1
3405	C1
3406	F2
3408	D1
3410	D1
3412	D2
3413	D1
3420	G4
3421	H4
3423	G5
3424	H8
3425	H6
3426	G7
3427	H7
3428	H7
3429	G7
3430	F9
3431	H4
3433	G5
3434	G6
3435	H7
3436	H7
3437	H7
3438	G3
3439	H3
3440	H3
3442	G9
3443	E9
3444	F9
3445	F9
3446	F9
3447	F9
3448	F9
3449	F10
3450	F10
3451	G10
3452	G10
3453	G10
3454	H10
3455	H10
3456	H10
3457	I10
3458	I10
3459	I10
3460	F11
3461	F11
3462	G11
3463	G11
3464	G11
3465	F12
3466	F12
3467	F13
3471	D10
3472	E11
3473	E11
3474	A4
3475	A9
3477	I8
3478	I7
3479	H11
3480	G13
3484	I2
3485	I2
3486	I2
3487	I2
3488	B13
3494	F12
3495	H12
3496	G12
3499	F9
3505	I7
3506	I6
3508	E2
3509	E2
3510	D10
3513	H1
3516	B11
3517	H6
3518	H6
3519	H6
3520	H6
3521	F2
3522	F2
3523	F2
3524	F2
5400	B11
6400	A10
6429	I7
6431	I8
6434	F9
7402	A9
7403	H3
7405	D11
7406	I8
7409	H1
7412	H12
7413	G13
7414	B8
7416	I6
F400	F2
F401	F3
F402	F2
F403	F3
F404	F3
F405	G3
F406	A9
F407	D9
F408	E9
F409	H4
F410	A4
F411	G4
F412	A13
F413	A13
F414	A13
F415	A13
F416	A13
F417	B13
F418	B13
F419	B13
F420	B13
F421	B13
F422	B13
F423	C13
F424	C13
F425	C13
F426	G5
F427	G4
F428	F10
F429	F11
F430	G10
F431	G11
F432	I6
F433	G11
F434	G10
F435	G10
F436	H10
F437	I7
F438	H10
F440	I10
F442	I10
F444	I10
F452	G13
F453	H13
F454	G13
F455	H13
F456	H13
F457	I13
F458	F13
F459	I13
F460	I13
F461	I13
F462	D13
F463	D13
F464	D13
F465	D13
F466	D13

2400 B4	2407 A7	2412 B6	2424 A13	3403 C6	3410 C6	3423 B6	3428 A6	3434 B6	3439 B4	3445 B8	3450 A6	3455 A12	3460 A5	3465 A16	3473 B5	3480 B8	3488 B8	3508 A5	3518 A6	3523 A5	4405 B5	4411 A5	7409 B5
2401 B5	2408 B6	2416 B5	2426 A13	3404 C6	3412 C5	3424 A7	3429 A7	3435 A6	3440 B4	3446 B7	3451 A6	3456 A13	3461 A3	3466 A16	3475 B10	3484 B5	3494 B8	3509 A5	3519 B6	3524 A5	4406 A5	6429 B16	7412 C10
2404 A7	2409 B6	2420 A13	3400 C7	3405 C6	3413 C5	3425 B6	3430 B9	3436 A6	3442 B9	3447 A7	3452 A7	3457 A14	3462 A3	3467 A16	3477 A16	3485 B5	3499 B7	3510 A6	3520 B6	4401 A7	4408 A12	6431 B16	7413 C10
2405 A4	2410 A6	2422 A16	3401 C7	3406 A5	3420 B6	3426 A7	3431 B5	3437 A7	3443 B8	3448 A7	3453 A9	3458 A14	3463 A2	3471 A6	3478 B16	3486 B5	3505 B15	3513 B5	3521 A4	4402 A8	4409 B8	7405 A6	7414 B7
2406 B8	2411 A5	2423 A13	3402 C6	3408 C6	3421 B6	3427 A6	3433 B6	3438 B4	3444 B7	3449 B8	3454 A11	3459 A6	3464 A1	3472 A5	3479 A5	3487 B5	3506 B15	3517 A6	3522 A4	4404 B6	4410 A16	7406 B16	7416 B15


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
DISPLAY BOARD / copperside view
ALBUM -
1423
ALBUM +
1424
<< CD
1427
>> CD
FLASH CONNECTOR
1413
1438
DISPLAY
1439
SHUFFLE
1441
INPUT
1436
ERASE CD
UL SPEED SEL
UL DRAWER IN
UL DRAWER OUT
UL SW INFO
MUTE
FAN
POWER ON
GND
GND
-5V ever
+5V
NTC
-30V
-F
+F
1418
1425
PLAY/PAUSE CDR
1426
STOP CDR
1417
IRQ
RESET
I2C CLK
GND
I2C DATA
GND
1432
ALBUM -
1433
ALBUM +
1422
1416
GND
+5V
KEY0
GND
LED SPEED
LED ON/OFF
3103 303 3483.2
2002-02-01
9401
9402
9404
9405
9406
9407
9408
9409
9410
9411
9412
9413
9414
9415
9416
9417
9418
9419
9420
9421
9422
9424
9425
9426
9427
9428
9430
9431
9432
9433
9403
2413
2414
2415
2418
1400
7403
IR EYE
7409
EEPROM
7414
7405
1434
6400
5400
3495
3496
3516
7412
7413
1414
LED blue
LED red
GND
+5V
DISPLAY
7402
55
1
f0

Signal can also be measured on CDR module 1007/2
without any dismantling of the front cabinet

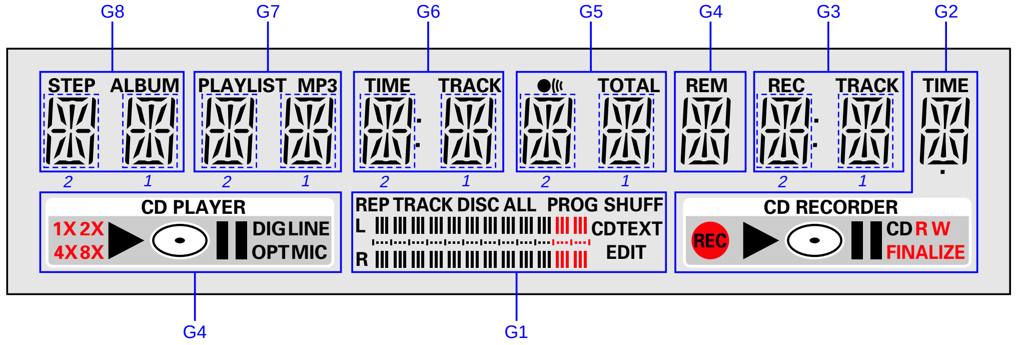
1400 B6	1416 B1	1423 A2	1427 A3	1433 A14	1438 A6	2414 C10	3495 C9	6400 B10	9401 A2	9405 C5	9409 A5	9413 A6	9417 A9	9421 B9	9426 A11	9431 A7
1413 A5	1417 A13	1424 A3	1428 A15	1434 A16	1439 A7	2415 A8	3496 C9	6434 B8	9402 B3	9406 B5	9410 B5	9414 A7	9418 B9	9422 B10	9427 B12	9432 A9
1414 C11	1418 A10	1425 A11	1429 A16	1435 A15	1441 A8	2418 A11	3516 A11	7402 C7	9403 B10	9407 B5	9411 A5	9415 A8	9419 B9	9424 A10	9428 B14	9433 B9
1415 A16	1422 A1	1426 A12	1432 A13	1436 A9	2413 C4	3474 B10	5400 B8	7403 C4	9404 A4	9408 B5	9412 A5	9416 B8	9420 B9	9425 B10	9430 B10	

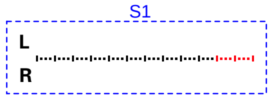

11
12
13
14
15
16
A
B
C
1425
PLAY/PAUSE CDR
1426
STOP CDR
1417
IRQ
RESET
I2C CLK
GND
I2C DATA
GND
1432
ALBUM -
1433
ALBUM +
1428
<< CDR
1429
>> CDR
1415
Key 2
GND
1435
REC
1434
COPY
6429
REC
6431
COPY CD
9426
9427
9428
f0

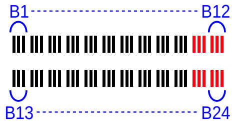
Signal can also be measured on CDR module 1007/2
without any dismantling of the front cabinet

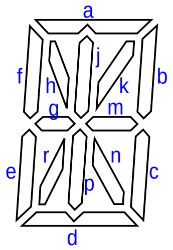
Display Board CDR79x .2, 030402

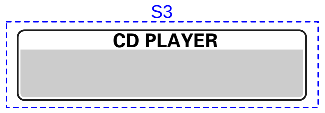
DISPLAY GRID ASSIGNMENT

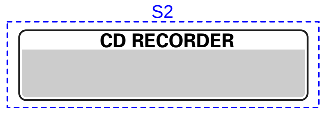

G8
G7
G6
G5
G4
G3
G2
STEP
ALBUM
PLAYLIST
MP3
TIME
TRACK
TOTAL
REM
REC
TRACK
TIME
2
1
2
1
2
1
2
1
2
1
CD PLAYER
1X 2X
4X 8X
DIG LINE
OPT MIC
REP TRACK DISC ALL PROG SHUFF
L
R
CD TEXT
EDIT
CD RECORDER
REC
CD R W
FINALIZE
G4
G1




B1
B12
B13
B24


a
f
h
j
k
b
g
m
e
r
p
n
c
d


S3
CD PLAYER

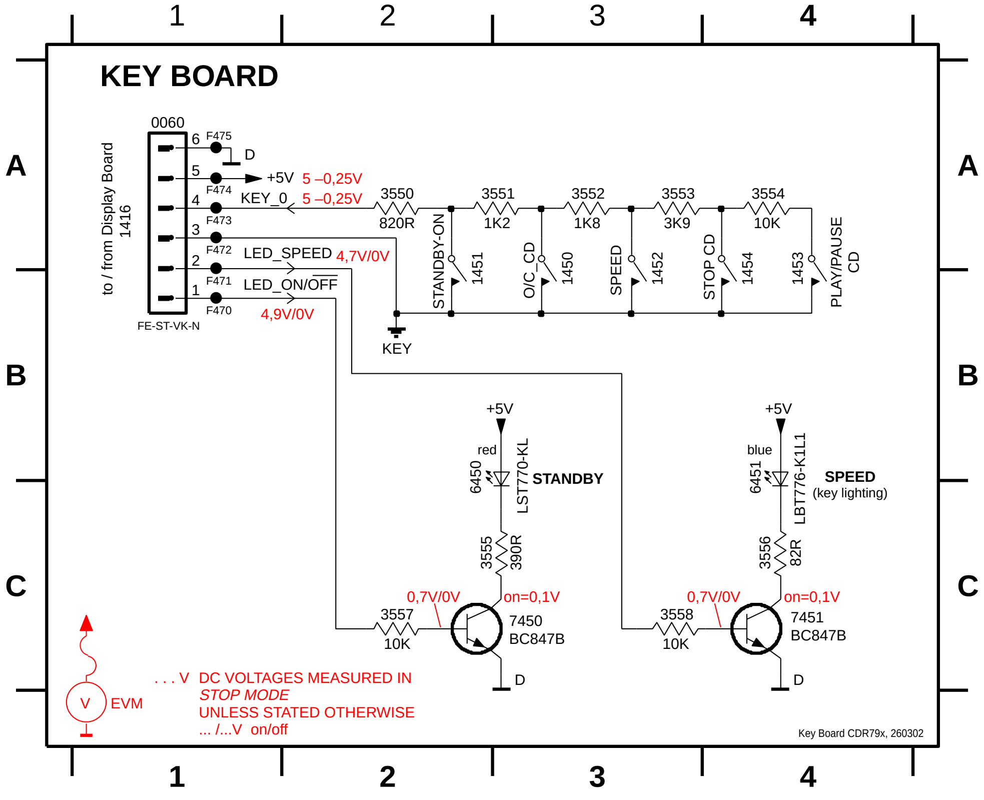

S2
CD RECORDER

Pin		44	45	46	47	48	49	50	51
		G8	G7	G6	G5	G4	G3	G2	G1
5	P1	2d	2d	2d	2d	**LINE**	2d	-	B1
6	P2	2n	2n	2n	2n	**MIC**	2n	REC	B2
7	P3	2p	2p	2p	2p	**DIG**	2p	▶	B3
8	P4	2r	2r	2r	2r	**OPT**	2r	**FINALIZE**	B4
9	P5	2e	2e	2e	2e	❚❚	2e	❚❚	B5
10	P6	2c	2c	2c	2c	◉	2c	○	B6
11	P7	2g	2g	2g	2g	○	2g	◉	B7
12	P8	2m	2m	2m	2m	▶	2m	-	B8
13	P9	2f	2f	2f	2f	**2X**	2f	**W**	B9
14	P10	2b	2b	2b	2b	**1X**	2b	**R**	B10
15	P11	2k	2k	2k	2k	**8X**	2k	**CD**	B11
16	P12	2j	2j	2j	2j	**4X**	2j	-	B12
17	P13	2h	2h	2h	2h	S3	2h	S2	S1
18	P14	2a	2a	2a	2a	-	2a	-	B13
19	P15	-	-	:	-	-	:	•	B14
20	P16	1d	1d	1d	1d	d	1d	d	B15
21	P17	1n	1n	1n	1n	n	1n	n	B16
22	P18	1p	1p	1p	1p	p	1p	p	B17
23	P19	1r	1r	1r	1r	r	1r	r	B18
24	P20	1e	1e	1e	1e	e	1e	e	B19
25	P21	1c	1c	1c	1c	c	1c	c	B20
26	P22	1g	1g	1g	1g	g	1g	g	B21
27	P23	1m	1m	1m	1m	m	1m	m	B22
28	P24	1f	1f	1f	1f	f	1f	f	B23
29	P25	1b	1b	1b	1b	b	1b	b	B24
30	P26	1k	1k	1k	1k	k	1k	k	**REP**
31	P27	1j	1j	1j	1j	j	1j	j	**TRACK**
32	P28	1h	1h	1h	1h	h	1h	h	**DISC**
33	P29	1a	1a	1a	1a	a	1a	a	**ALL**
34	P30	**STEP**	**MP3**	**TRACK**	**TOTAL**	**REM**	**TRACK**	**TIME**	**PROG**
35	P31	**ALBUM**	**PLAYLIST**	**TIME**	🔊	-	**REC**	-	**SHUFF**
36	P32	-	-	-	-	-	-	-	**CD**
37	P33	-	-	-	-	-	-	-	**TEXT**
38	P34	-	-	-	-	-	-	-	**EDIT**

Display grid assignment CDR79x, 030402

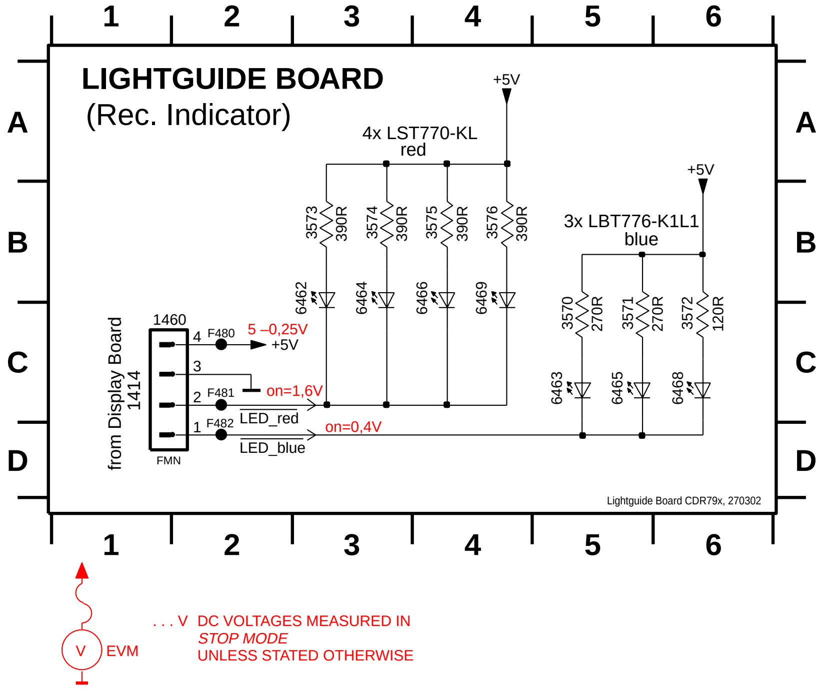
KEY BOARD

0060	A1
1450	A3
1451	A2
1452	A3
1453	A4
1454	A4
3550	A2
3551	A2
3552	A3
3553	A3
3554	A4
3555	C2
3556	C4
3557	C2
3558	C3
6450	B2
6451	B4
7450	C3
7451	C4
F470	B1
F471	B1
F472	A1
F473	A1
F474	A1
F475	A1


0060
to / from Display Board
1416
FE-ST-VK-N
F475
D
+5V 5 –0,25V
KEY_0 5 –0,25V
F474
F473
LED_SPEED 4,7V/0V
F472
LED_ON/OFF
F471
F470
4,9V/0V
3550 820R
3551 1K2
3552 1K8
3553 3K9
3554 10K
STANDBY-ON 1451
O/C_CD 1450
SPEED 1452
STOP CD 1454
1453 PLAY/PAUSE CD
KEY
+5V
red
6450
LST770-KL
STANDBY
3555 390R
0,7V/0V
on=0,1V
3557 10K
7450 BC847B
D
+5V
blue
6451
LBT776-K1L1
SPEED
(key lighting)
3556 82R
0,7V/0V
on=0,1V
3558 10K
7451 BC847B
D
V
EVM
. . . V DC VOLTAGES MEASURED IN
STOP MODE
UNLESS STATED OTHERWISE
... /...V on/off
Key Board CDR79x, 260302

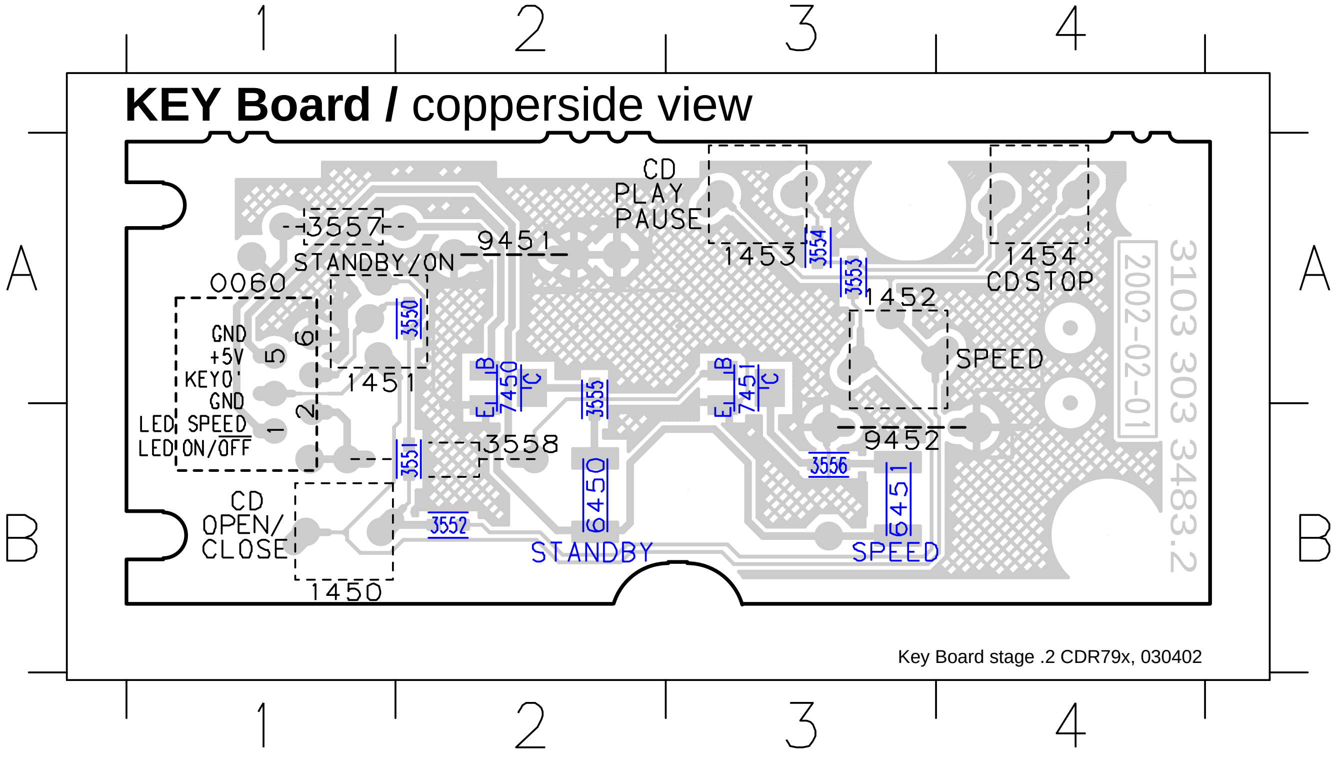
LIGHTGUIDE BOARD
(Rec. Indicator)

1460	C2
3570	C5
3571	C5
3572	C6
3573	B3
3574	B3
3575	B4
3576	B4
6462	B3
6463	C5
6464	B3
6465	C5
6466	B4
6468	C6
6469	B4
F480	C2
F481	C2
F482	D2


+5V
4x LST770-KL
red
3573 390R
3574 390R
3575 390R
3576 390R
6462
6464
6466
6469
+5V
3x LBT776-K1L1
blue
3570 270R
3571 270R
3572 120R
6463
6465
6468
1460
from Display Board
1414
FMN
F480 5 –0,25V +5V
F481 on=1,6V
LED_red
F482 on=0,4V
LED_blue
Lightguide Board CDR79x, 270302
V
EVM
. . . V DC VOLTAGES MEASURED IN
STOP MODE
UNLESS STATED OTHERWISE

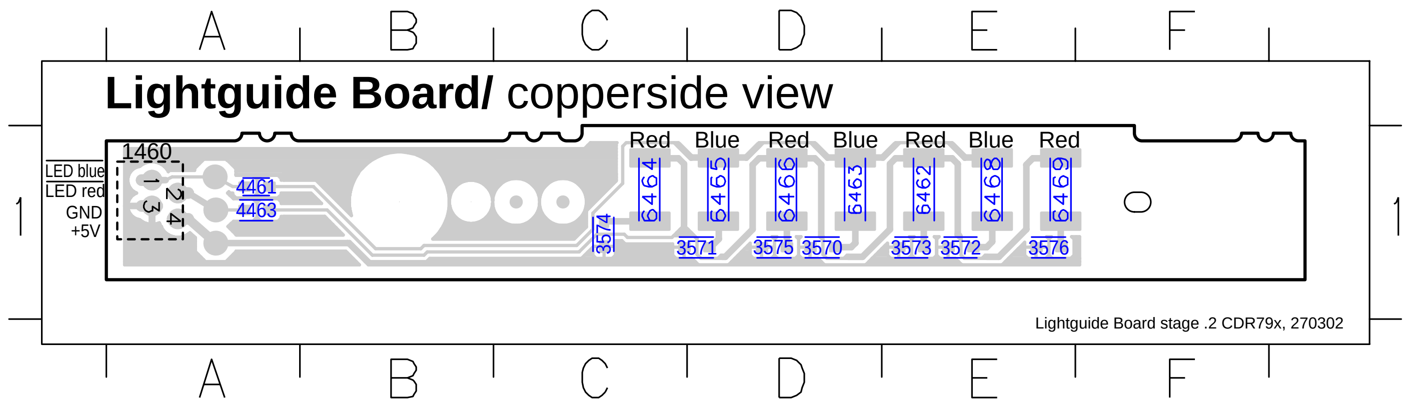
KEY Board / copperside view

0060	A1
1450	B1
1451	A1
1452	A3
1453	A3
1454	A4
3550	A2
3551	B2
3552	B2
3553	A3
3554	A3
3555	A2
3556	B3
3557	A1
3558	B2
6450	B2
6451	B3
7450	A2
7451	A3
9451	A2
9452	B3

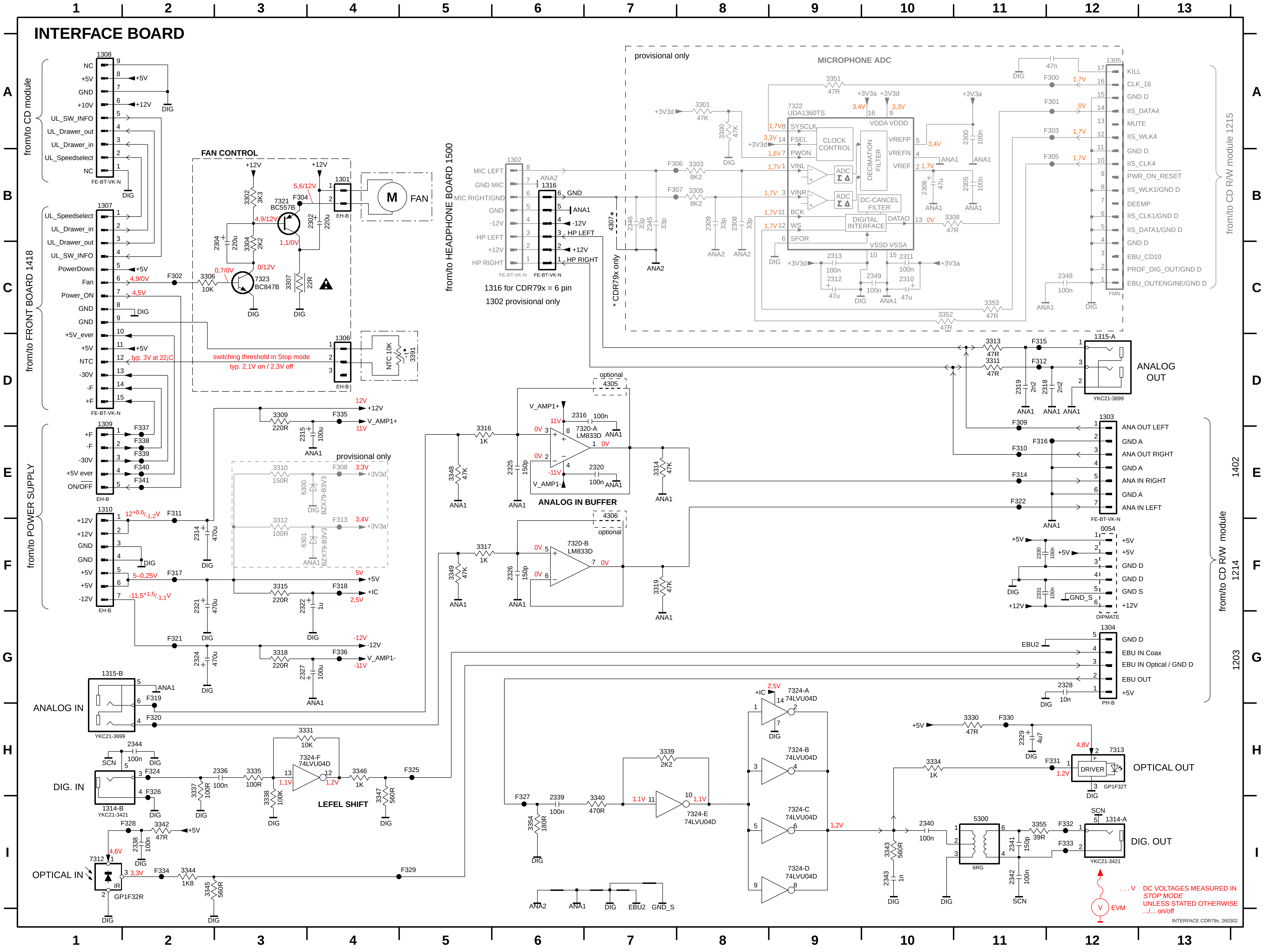

3557
STANDBY/ON
9451
CD PLAY PAUSE
1453
3554
1454
CD STOP
0060
GND
+5V
KEY0
GND
LED SPEED
LED ON/OFF
6 5 2 1
3550
1451
7450
3555
7451
3553
1452
SPEED
3551
3558
9452
3556
CD OPEN/CLOSE
1450
3552
6450
STANDBY
6451
SPEED
3103 303 3483.2
2002-02-01
Key Board stage .2 CDR79x, 030402

Lightguide Board/ copperside view

1460	A1
3570	D1
3571	D1
3572	E1
3573	E1
3574	C1
3575	D1
3576	E1
4461	A1
4463	A1
6462	E1
6463	D1
6464	C1
6465	D1
6466	D1
6468	E1
6469	E1


1460
LED blue
LED red
GND
+5V
4461
4463
3574
Red 6464
Blue 6465
Red 6466
Blue 6463
Red 6462
Blue 6468
Red 6469
3571
3575
3570
3573
3572
3576
Lightguide Board stage .2 CDR79x, 270302

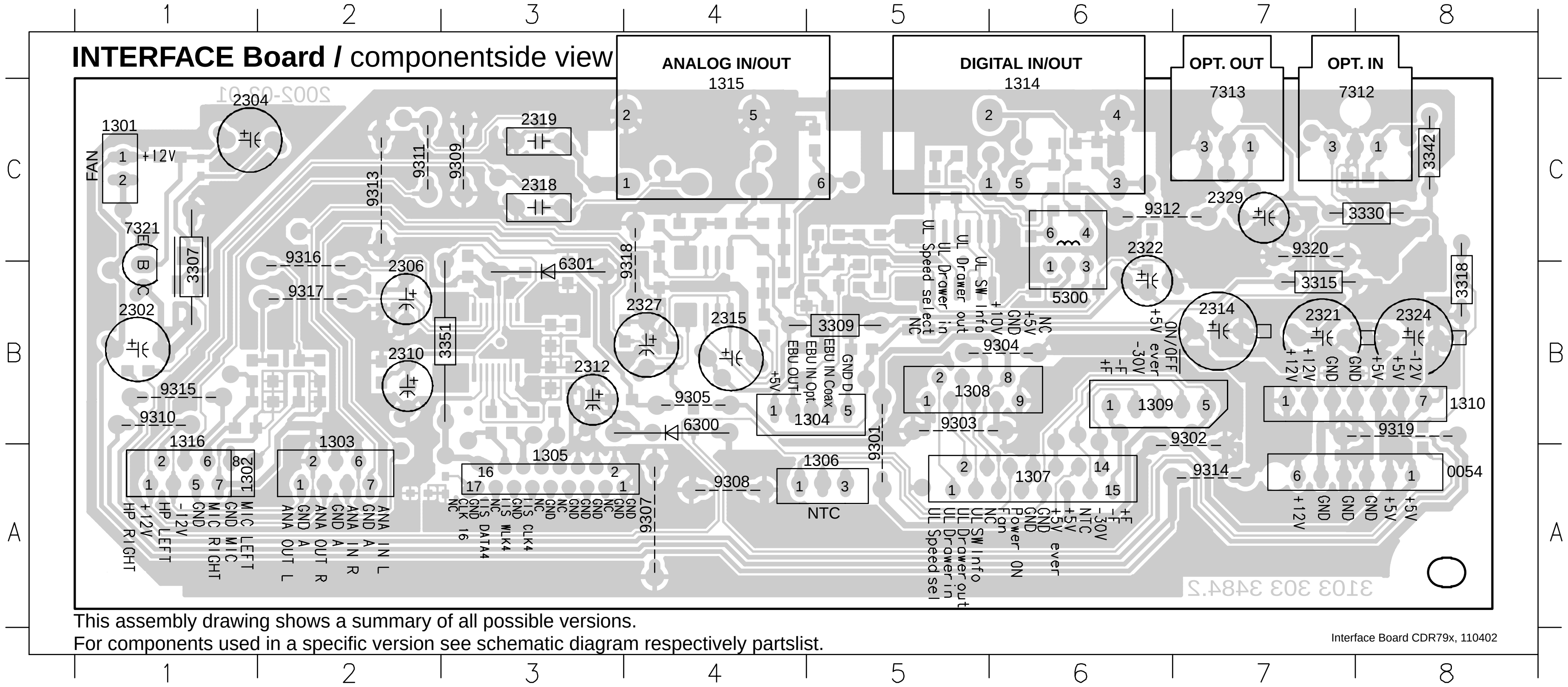
INTERFACE BOARD


from/to CD module
1308
NC
+5V
GND
+10V
UL_SW_INFO
UL_Drawer_out
UL_Drawer_in
UL_Speedselect
FE-BT-VK-N
DIG
FAN CONTROL
+12V
3302 3K3
7321 BC557B
5,6/12V
F304
4,9/12V
1,1/0V
2304 220u
3304 2K2
2302 220u
1301
EH-B
M
FAN
3306 10K
0,7/0V
0/12V
7323 BC847B
3307 22R
F302
from/to FRONT BOARD 1418
1307
UL_Speedselect
UL_Drawer_in
UL_Drawer_out
UL_SW_INFO
PowerDown
Fan
Power_ON
GND
+5V_ever
+5V
NTC
-30V
-F
+F
4,9/0V
4,5V
typ. 3V at 22¡C
switching threshold in Stop mode
typ. 2,1V on / 2,3V off
1306
NTC 10K
3391
from/to POWER SUPPLY
1309
F337
F338
F339
F340
F341
+F
-F
-30V
+5V ever
ON/OFF
1310
+12V
GND
-12V
12+0,6/-1,2V
F311
2314 470u
5-0,25V
F317
-11,5+1,5/-1,1V
2321 470u
F321
2324 470u
3309 220R
F335
12V
+12V
V_AMP1+
11V
2315 100u
provisional only
3310 150R
F308
3,3V
+3V3d
6300 BZX79-B3V3
3312 100R
F313
3,4V
+3V3a
6301 BZX79-B3V3
3315 220R
F318
5V
+5V
+IC
2,5V
2322 1u
3318 220R
F336
-12V
V_AMP1-
-11V
2327 100u
ANA1
1315-B
ANALOG IN
F319
F320
YKC21-3699
from/to HEADPHONE BOARD 1500
1302
MIC LEFT
GND MIC
MIC RIGHT/GND
GND
-12V
HP LEFT
+12V
HP RIGHT
1316
ANA2
1316 for CDR79x = 6 pin
1302 provisional only
* CDR79x only
4307*
optional
4305
V_AMP1+
2316 100n
7320-A LM833D
3316 1K
3348 47K
2325 150p
2320 100n
V_AMP1-
ANALOG IN BUFFER
3314 47K
4306
7320-B LM833D
3317 1K
3349 47K
2326 150p
3319 47K
MICROPHONE ADC
3351 47R
3301 47K
3300 47K
7322 UDA1360TS
SYSCLK
FSEL
PWON
VINL
VINR
BCK
WS
SFOR
CLOCK CONTROL
DECIMATION FILTER
ADC
DC-CANCEL FILTER
DIGITAL INTERFACE
VDDA VDDD
VREFP
VREFN
VREF
DATAO
VSSD VSSA
F306
F307
3303 8K2
3305 8K2
2346 33p
2345 33p
2309 33p
2308 33p
2300 100n
2306 47u
2305 100n
3308 47R
2313 100n
2312 47u
2349 100n
2311 100n
2310 47u
3353 47R
3352 47R
1305
KILL
CLK_16
GND D
IIS_DATA4
MUTE
IIS_WLK4
IIS_CLK4
PWR_ON_RESET
IIS_WLK1/GND D
DEEMP
IIS_CLK1/GND D
IIS_DATA1/GND D
EBU_CD10
PROF_DIG_OUT/GND D
EBU_OUTENGINE/GND D
FMN
F300
F301
F303
F305
2347 47n
2348 100n
from/to CD R/W module 1215
1315-A
3313 47R
F315
3311 47R
F312
2319 2n2
2318 2n2
ANALOG OUT
YKC21-3699
1303
F309
F316
F310
F314
F322
ANA OUT LEFT
GND A
ANA OUT RIGHT
ANA IN RIGHT
ANA IN LEFT
FE-BT-VK-N
1402
0054
2330 100n
2331 100n
GND_S
GND D
GND S
DIPMATE
from/to CD R/W module 1214
1304
EBU2
EBU IN Coax
EBU IN Optical / GND D
EBU OUT
2328 10n
PH-B
1203
2344 100n
SCN
DIG. IN
F324
F326
1314-B
YKC21-3421
3337 100R
2336 100n
3335 100R
3338 100K
3331 10K
7324-F 74LVU04D
1,1V
1,2V
3346 1K
3347 560R
F325
LEFEL SHIFT
F328
3342 47R
2338 100n
7312
4,6V
OPTICAL IN
IR
GP1F32R
3,3V
F334
3344 1K8
3345 560R
F329
F327
3354 180R
2339 100n
3340 470R
3339 2K2
7324-E 74LVU04D
7324-A 74LVU04D
7324-B 74LVU04D
7324-C 74LVU04D
7324-D 74LVU04D
2,5V
3330 47R
F330
2329 4u7
4,8V
7313
DRIVER
GP1F32T
OPTICAL OUT
3334 1K
F331
3343 560R
2343 1n
2340 100n
5300
6RG
2341 150p
2342 100n
3355 39R
F332
F333
1314-A
DIG. OUT
YKC21-3421
ANA2
ANA1
DIG
EBU2
GND_S
. . . V DC VOLTAGES MEASURED IN STOP MODE UNLESS STATED OTHERWISE
.../... on/off
EVM
INTERFACE CDR79x, 260302

1303	D12
1304	G12
1305	A12
1306	D4
1307	B1
1308	A1
1309	D1
1310	E1
1314-A	I12
1314-B	I2
1315-A	C12
1315-B	G1
1316	B6
2300	A11
2302	B4
2304	C3
2305	B11
2306	B10
2308	B8
2309	B8
2310	C10
2311	C10
2312	C9
2313	C9
2314	F2
2315	E3
2316	D6
2318	D12
2319	D11
2320	E7
2321	F2
2322	F3
2324	G2
2325	E6
2326	F6
2327	G3
2328	G12
2329	H11
2330	F11
2331	F11
2336	H3
2338	I2
2339	I6
2340	I10
2341	I11
2342	I11
2343	I10
2344	H2
2345	B7
2346	B7
2347	A12
2348	C12
2349	C10
3300	A8
3301	A8
3302	B3
3303	B8
3304	C3
3305	B8
3306	C2
3307	C3
3308	B10
3309	D3
3310	E3
3311	D11
3312	F3
3313	D11
3314	E7
3315	F3
3316	E5
3317	F5
3318	G3
3319	F7
3330	H11
3331	H3
3334	H10
3335	H3
3337	H2
3338	H3
3339	H7
3340	I7
3342	I2
3343	I10
3344	I2
3345	I2
3346	H4
3347	H4
3348	E5
3349	F5
3351	A9
3352	C10
3353	C11
3354	I6
3355	I11
3391	D4
4305	D7
4306	E7
4307	B7
5300	I11
6300	E3
6301	F3
7312	I1
7313	H12
7320-A	E6
7320-B	F6
7321	B3
7322	A9
7323	C3
7324-A	G9
7324-B	H9
7324-C	I9
7324-D	I9
7324-E	I8
7324-F	H4
F300	A12
F304	B3
F305	B12
F306	B7
F307	B7
F308	E4
F309	D11
F310	E11
F311	E2
F312	D11
F313	F4
F314	E11
F315	D11
F316	E11
F317	F2
F318	F4
F319	G2
F320	H2
F321	G2
F322	E11
F324	H2
F325	H5
F326	H2
F327	I6
F328	I2
F329	I5
F330	H11
F331	H12
F332	I12
F333	I12
F334	I2
F335	D4
F336	G4
F337	E2
F338	E2
F339	E2
F340	E2
F341	E2

0054	A8	1304	B5	1308	B5	1315	C4	2306	B2	2315	B4	2322	B6	3307	B1	3330	C8	6300	B4	7321	B1	9304	B6	9309	C3	9313	C2	9317	B2
1301	C1	1305	A3	1309	B6	1316	A1	2310	B2	2318	C3	2324	B8	3309	B5	3342	C8	6301	B3	9301	A5	9305	B4	9310	B1	9314	A7	9318	B3
1302	A1	1306	A5	1310	B8	2302	B1	2312	B3	2319	C3	2327	B3	3315	B7	3351	B3	7312	C7	9302	A7	9307	A4	9311	C2	9315	B1	9319	A7
1303	A2	1307	A5	1314	C6	2304	C1	2314	B7	2321	B7	2329	B7	3318	B8	5300	B6	7313	C7	9303	B5	9308	A4	9312	C6	9316	B2	9320	A7

INTERFACE Board / componentside view

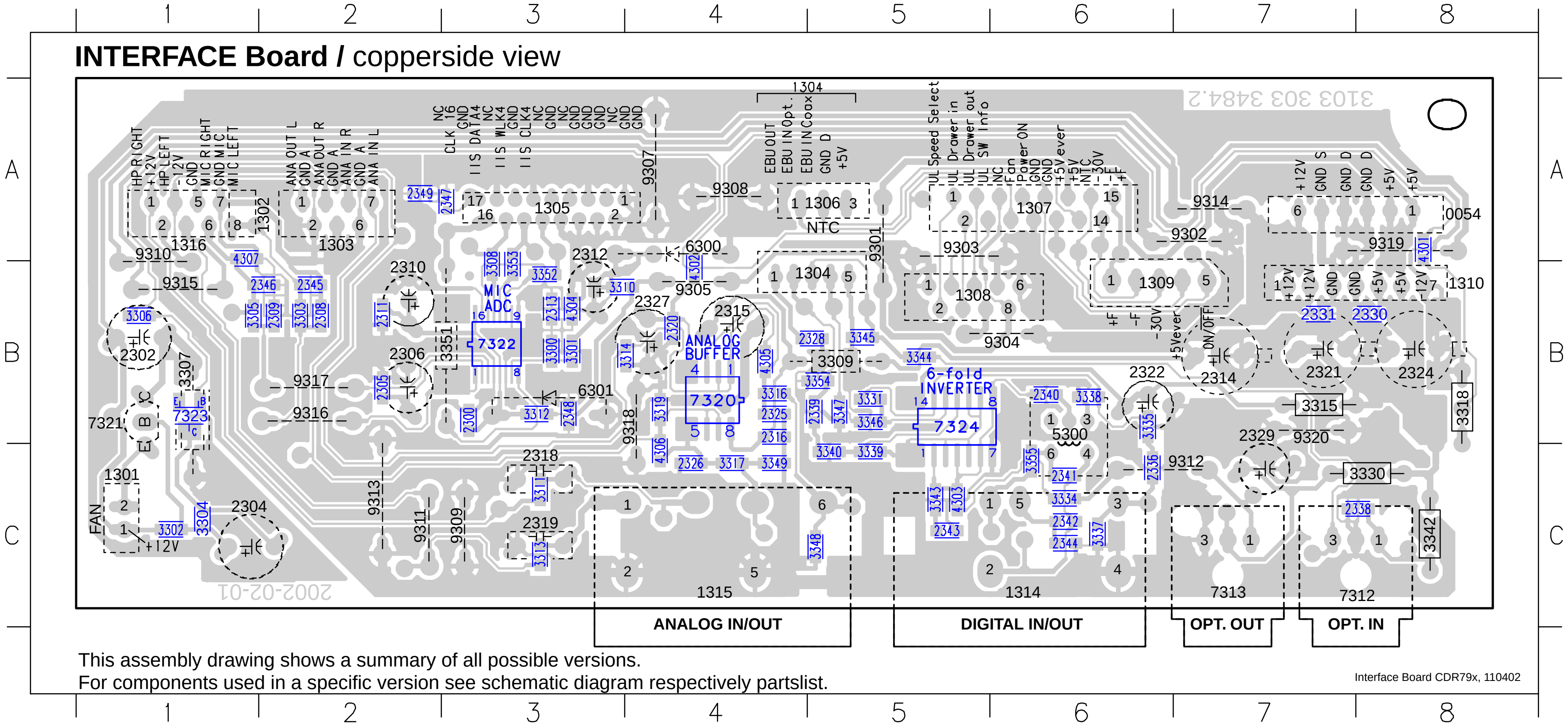

1
2
3
4
5
6
7
8
C
B
A
ANALOG IN/OUT
1315
DIGITAL IN/OUT
1314
OPT. OUT
7313
OPT. IN
7312
FAN
+12V
1301
2304
2319
2318
9313
9311
9309
7321
3307
9316
9317
2306
6301
9318
2302
2327
2315
3309
2310
3351
2312
9315
9310
9305
6300
1304
1316
1303
1305
1302
1306
NTC
9308
9307
9301
5300
9312
2329
3330
2322
9320
3315
3318
3342
2314
2321
2324
1308
1309
1310
9304
9303
9302
9319
1307
9314
0054
HP RIGHT
HP LEFT
MIC RIGHT
MIC LEFT
ANA OUT L
ANA OUT R
ANA IN R
ANA IN L
EBU IN Coax
EBU IN Opt
EBU OUT
UL Speed select
UL Drawer in
UL Drawer out
UL SW info
ON/OFF
+5V ever
2002-02-01
3103 303 3484.2

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Interface Board CDR79x, 110402

2300	B3	2311	B2	2325	B4	2331	B7	2340	B6	2344	C6	2348	B3	3302	C1	3306	B1	3312	B3	3317	C4	3335	B6	3340	C5	3346	B5	3352	B3	4301	A8	4305	B4	7322	B3
2305	B2	2313	B3	2326	C4	2336	C6	2341	C6	2345	B2	2349	A2	3303	B2	3308	B3	3313	C3	3319	B4	3337	C6	3343	C5	3347	B5	3353	B3	4302	B4	4306	C4	7323	B1
2308	B2	2316	B4	2328	B5	2338	C8	2342	C6	2346	B2	3300	B3	3304	C1	3310	B3	3314	B4	3331	B5	3338	B6	3344	B5	3348	C5	3354	B5	4303	C5	4307	A1	7324	B5
2309	B2	2320	B4	2330	B8	2339	B5	2343	C5	2347	A3	3301	B3	3305	B1	3311	C3	3316	B4	3334	C6	3339	C5	3345	B5	3349	C4	3355	C6	4304	B3	7320	B4		

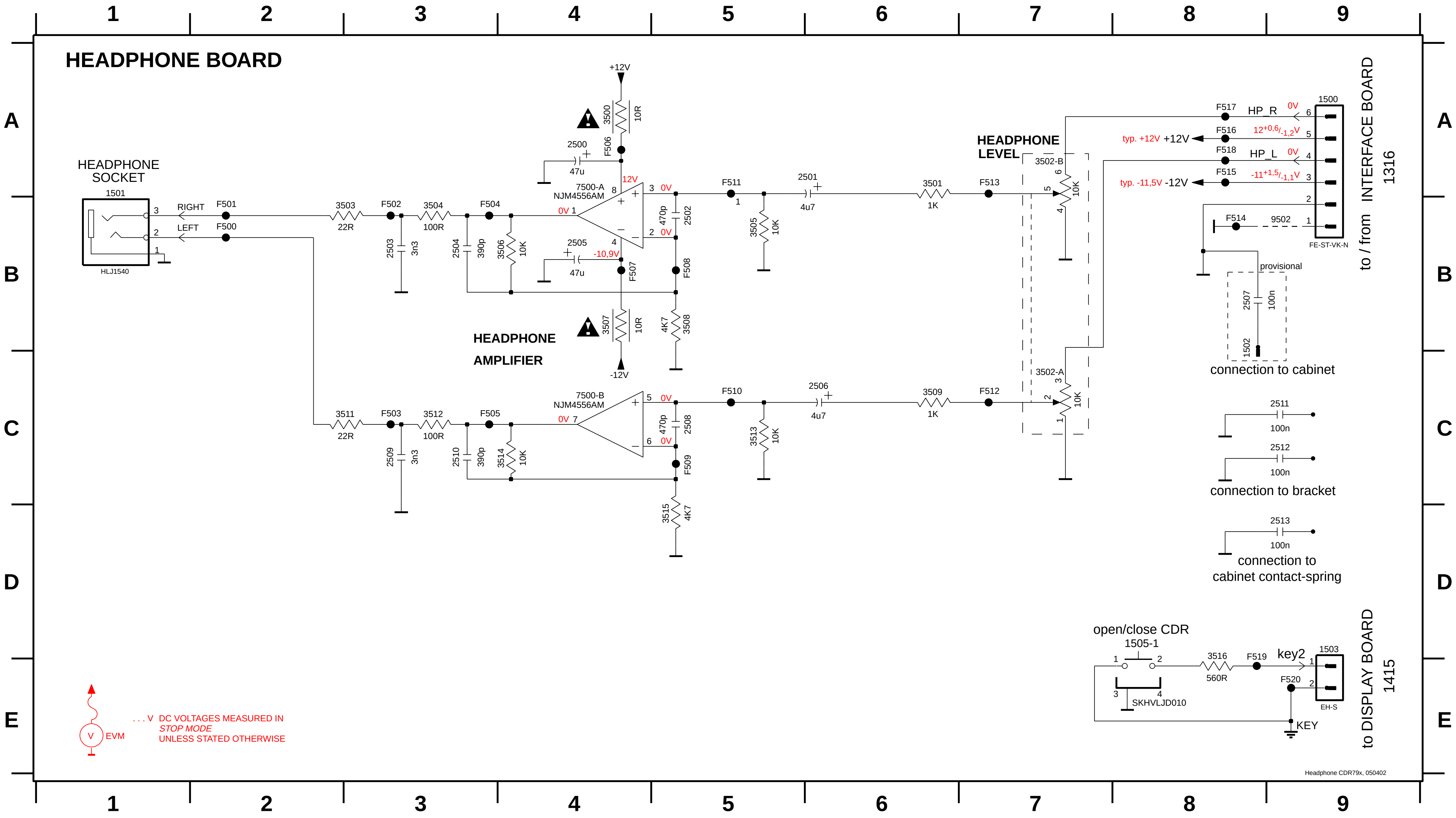
INTERFACE Board / copperside view


1
2
3
4
5
6
7
8
A
B
C
ANALOG IN/OUT
1315
DIGITAL IN/OUT
1314
OPT. OUT
7313
OPT. IN
7312
MIC ADC
7322
ANALOG BUFFER
7320
6-fold INVERTER
7324
7323
7321
1301
FAN
+12V
2304
1316
1303
1305
1302
1306
NTC
1304
1307
1308
1309
1310
0054
9310
9315
9317
9316
9308
9307
9305
9301
9303
9304
9302
9314
9319
9312
9320
9318
9313
9311
9309
2302
2306
2310
2312
2315
2327
2318
2319
2322
2314
2321
2324
2329
6300
6301
3309
5300
3315
3330
3318
3342
3307
3351
HP RIGHT
HP LEFT
MIC RIGHT
MIC LEFT
ANA OUT L
ANA OUT R
ANA IN R
ANA IN L
EBU OUT
EBU IN Opt.
EBU IN Coax
UL Speed Select
UL Drawer in
UL Drawer out
UL SW Info
ON/OFF
+5V ever
2002-02-01
3103 303 3484.2

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

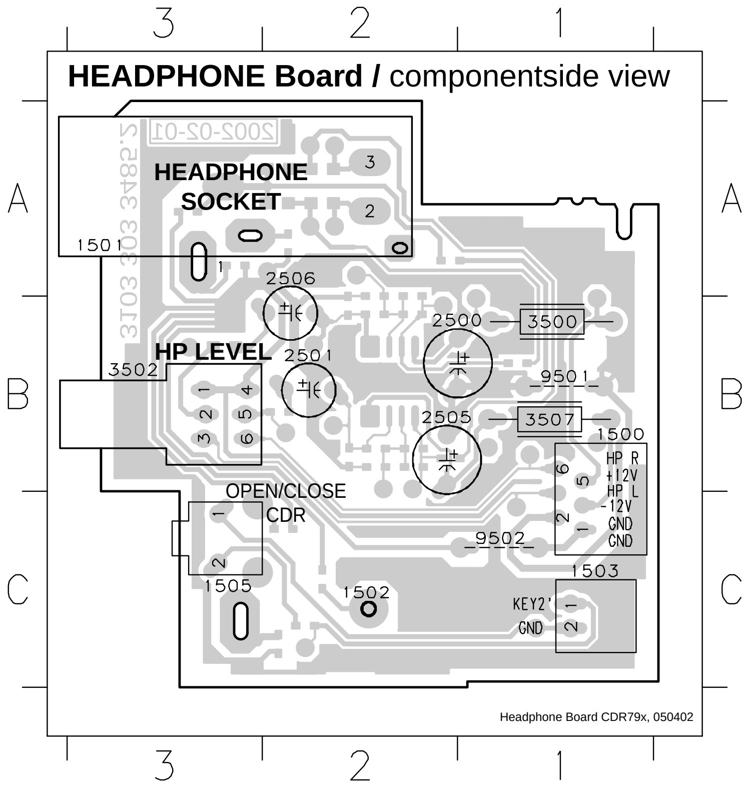
Interface Board CDR79x, 110402

0054	A8	1304	B5	1308	B5	1315	C4	2306	B2	2315	B4	2322	B6	3307	B1	3330	C8	6300	B4	7321	B1	9304	B6	9309	C3	9313	C2	9317	B2
1301	C1	1305	A3	1309	B6	1316	A1	2310	B2	2318	C3	2324	B8	3309	B5	3342	C8	6301	B3	9301	A5	9305	B4	9310	B1	9314	A7	9318	B3
1302	A1	1306	A5	1310	B8	2302	B1	2312	B3	2319	C3	2327	B3	3315	B7	3351	B3	7312	C7	9302	A7	9307	A4	9311	C2	9315	B1	9319	A7
1303	A2	1307	A5	1314	C6	2304	C1	2314	B7	2321	B7	2329	B7	3318	B8	5300	B6	7313	C7	9303	B5	9308	A4	9312	C6	9316	B2	9320	A7

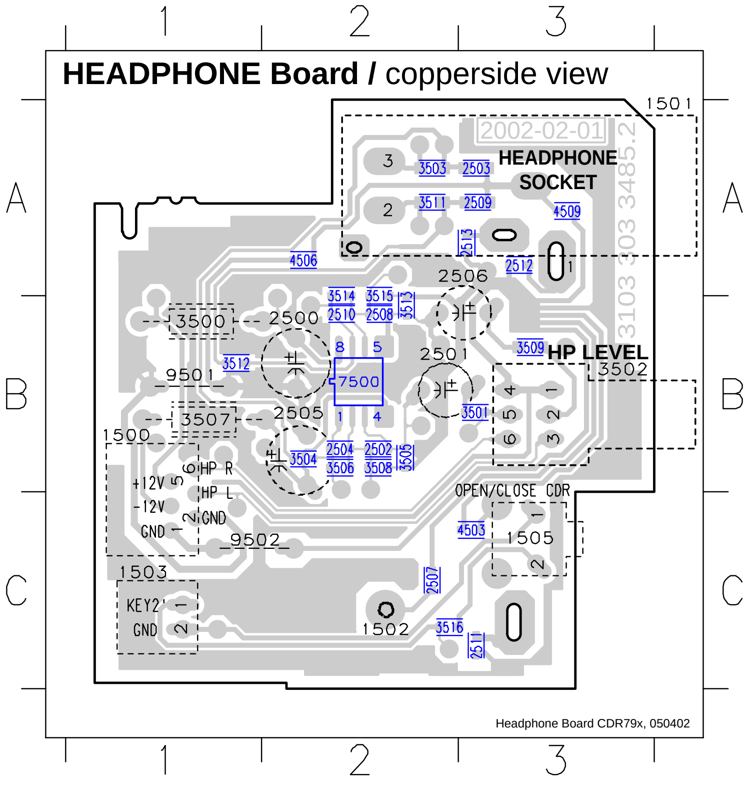

HEADPHONE BOARD
HEADPHONE SOCKET
1501
HLJ1540
RIGHT
LEFT
HEADPHONE AMPLIFIER
7500-A NJM4556AM
7500-B NJM4556AM
+12V
-12V
HEADPHONE LEVEL
3502-A
3502-B
10K
HP_R
HP_L
typ. +12V +12V
typ. -11,5V -12V
1500
FE-ST-VK-N
to / from INTERFACE BOARD 1316
provisional
connection to cabinet
connection to bracket
connection to cabinet contact-spring
open/close CDR
1505-1
SKHVLJD010
key2
KEY
1503
EH-S
to DISPLAY BOARD 1415
. . . V DC VOLTAGES MEASURED IN STOP MODE UNLESS STATED OTHERWISE
EVM
Headphone CDR79x, 050402

1500	A9
1501	A1
1502	C8
1503	D9
1505-1	D8
1505-2	E8
2500	A4
2501	A6
2502	B5
2503	B3
2504	B3
2505	B4
2506	C6
2507	B8
2508	C5
2509	C3
2510	C3
2511	C9
2512	C9
2513	D9
3500	A4
3501	A6
3502-A	C7
3502-B	B7
3503	B3
3504	B3
3505	B5
3506	B4
3507	B4
3508	B5
3509	C6
3511	C3
3512	C3
3513	C5
3514	C4
3515	D5
3516	E8
7500-A	A4
7500-B	C4
9502	B9
F500	B2
F501	B2
F502	B3
F503	C3
F504	B3
F505	C3
F506	A4
F507	B4
F508	B5
F509	C5
F510	C5
F511	A5
F512	C7
F513	A7
F514	B8
F515	A8
F516	A8
F517	A8
F518	A8
F519	E9
F520	E9

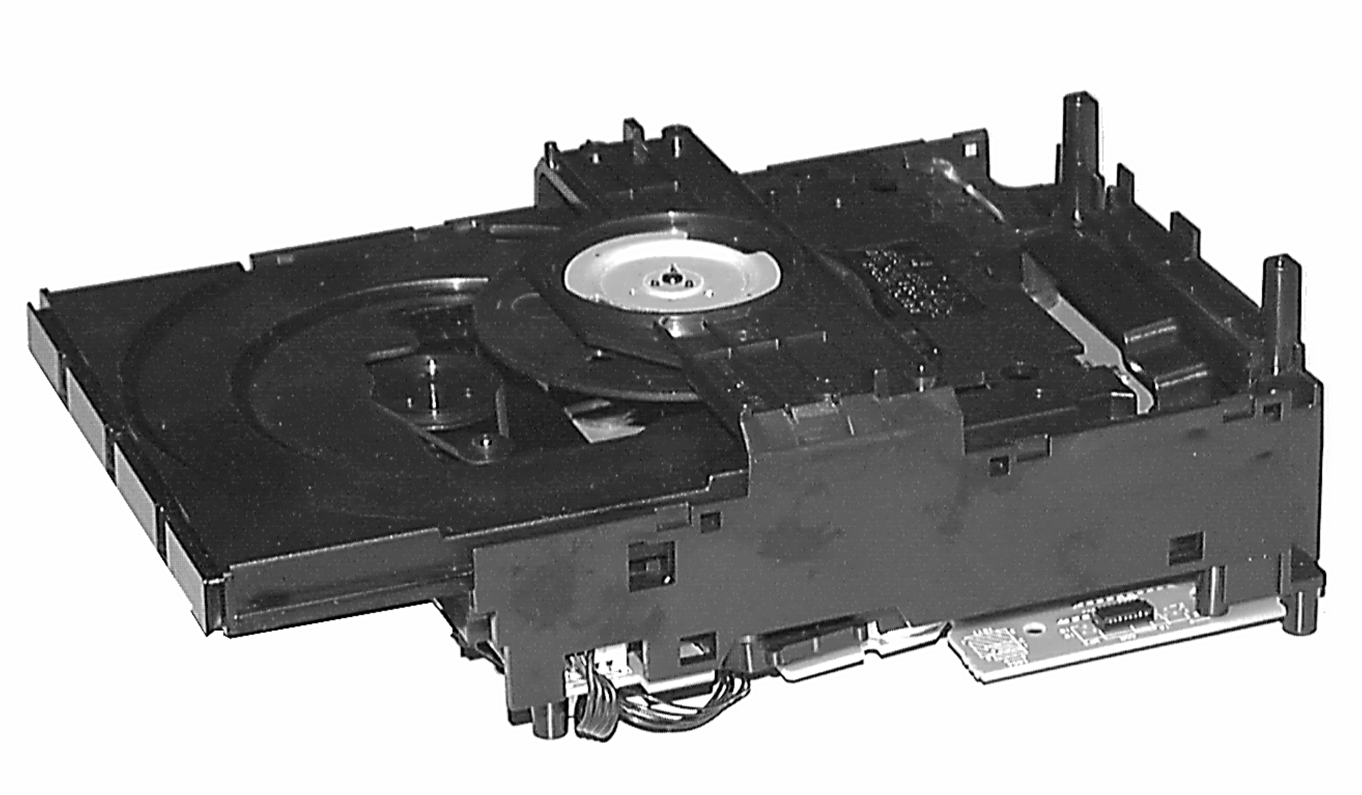
1500	B1
1501	A3
1502	C2
1503	C1
1505	C3
2500	B2
2501	B2
2505	B2
2506	A3
3500	B1
3502	B3
3507	B1
9501	B1
9502	C1


HEADPHONE Board / componentside view
HEADPHONE SOCKET
HP LEVEL
OPEN/CLOSE CDR
1501
3502
2506
2500
3500
2501
9501
2505
3507
1500
HP R
+12V
HP L
-12V
GND
GND
9502
1505
1502
1503
KEY2
GND
Headphone Board CDR79x, 050402

1500	B1
1501	A3
1502	C2
1503	C1
1505	C3
2500	B2
2501	B2
2505	B2
2506	A3
3500	B1
3502	B3
3507	B1
9501	B1
9502	C1


HEADPHONE Board / copperside view
HEADPHONE SOCKET
HP LEVEL
OPEN/CLOSE CDR
1501
3502
2506
2500
3500
2501
9501
2505
3507
7500
1500
HP R
+12V
HP L
-12V
GND
9502
1505
1502
1503
KEY2
GND
Headphone Board CDR79x, 050402

2502	B2
2503	A3
2504	B2
2507	C2
2508	B2
2509	A3
2510	B2
2511	C3
2512	A3
2513	A3
3501	B3
3503	A2
3504	B2
3505	B2
3506	B2
3508	B2
3509	B3
3511	A2
3512	B1
3513	B2
3514	A2
3515	A2
3516	C2
4503	C3
4506	A2
4509	A3
7500	B2



Universal Loader

(Single Disc Tray Loader)

Layout stage .5

TABLE OF CONTENTS

Abbreviations 8-2
Blockdiagram 8-3
Component Layout CD Board...8-4
Circuit Diagram 8-5
Exploded View 8-6
Mechanical Partslist 8-6, 10-2
Electrical Partslist..10-7

Service hints

CAUTION

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE

- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CD mechanism:

1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip onto the flexfoil cable to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil cable and connect it to the new CD drive

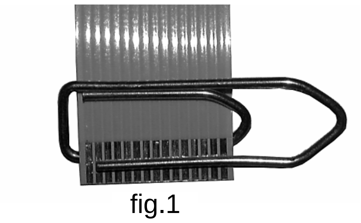
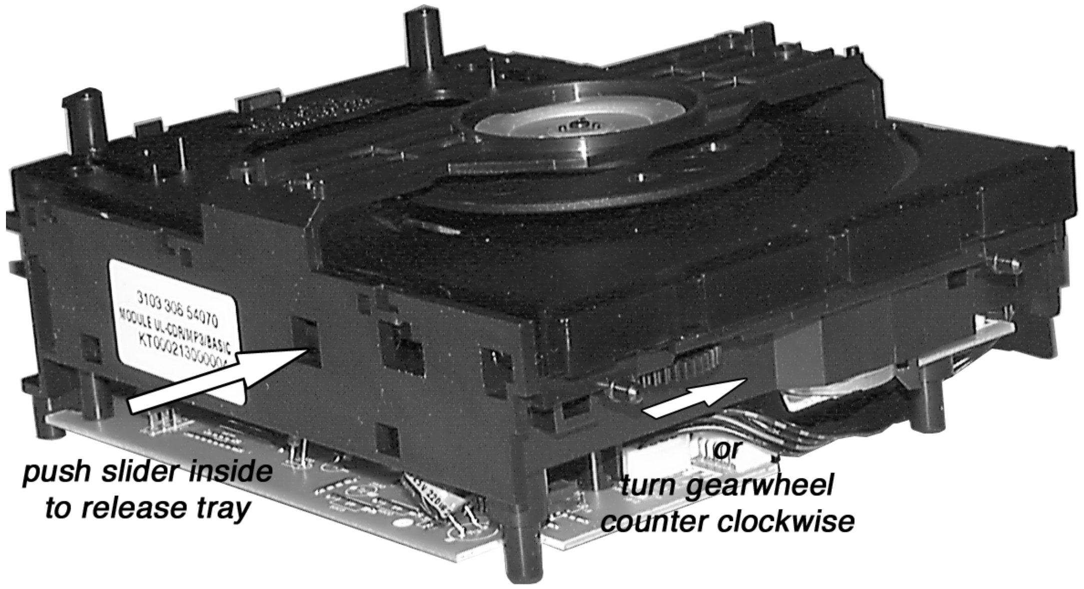


fig.1

Emergency open

In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the CD Module.
2. proceed as shown in picture below.



Service hints

Dismantling of Tray

1. Open the tray and release 2 catches as shown in fig. 2
2. Pull tray out.

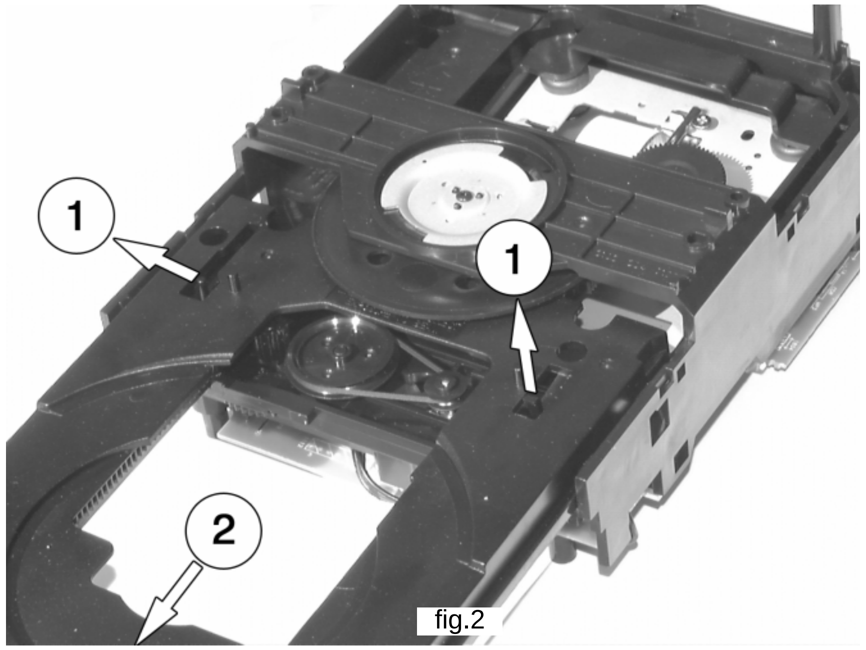
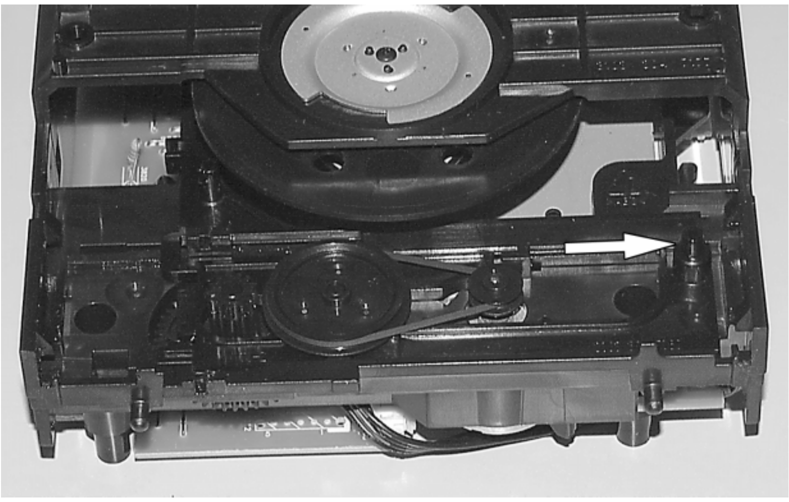


fig.2

Assembling of Tray

1. Check if slider is on the right side → see picture below.
2. If necessary - move slider to the right end position first.
3. Insert the Tray.



Abbreviations

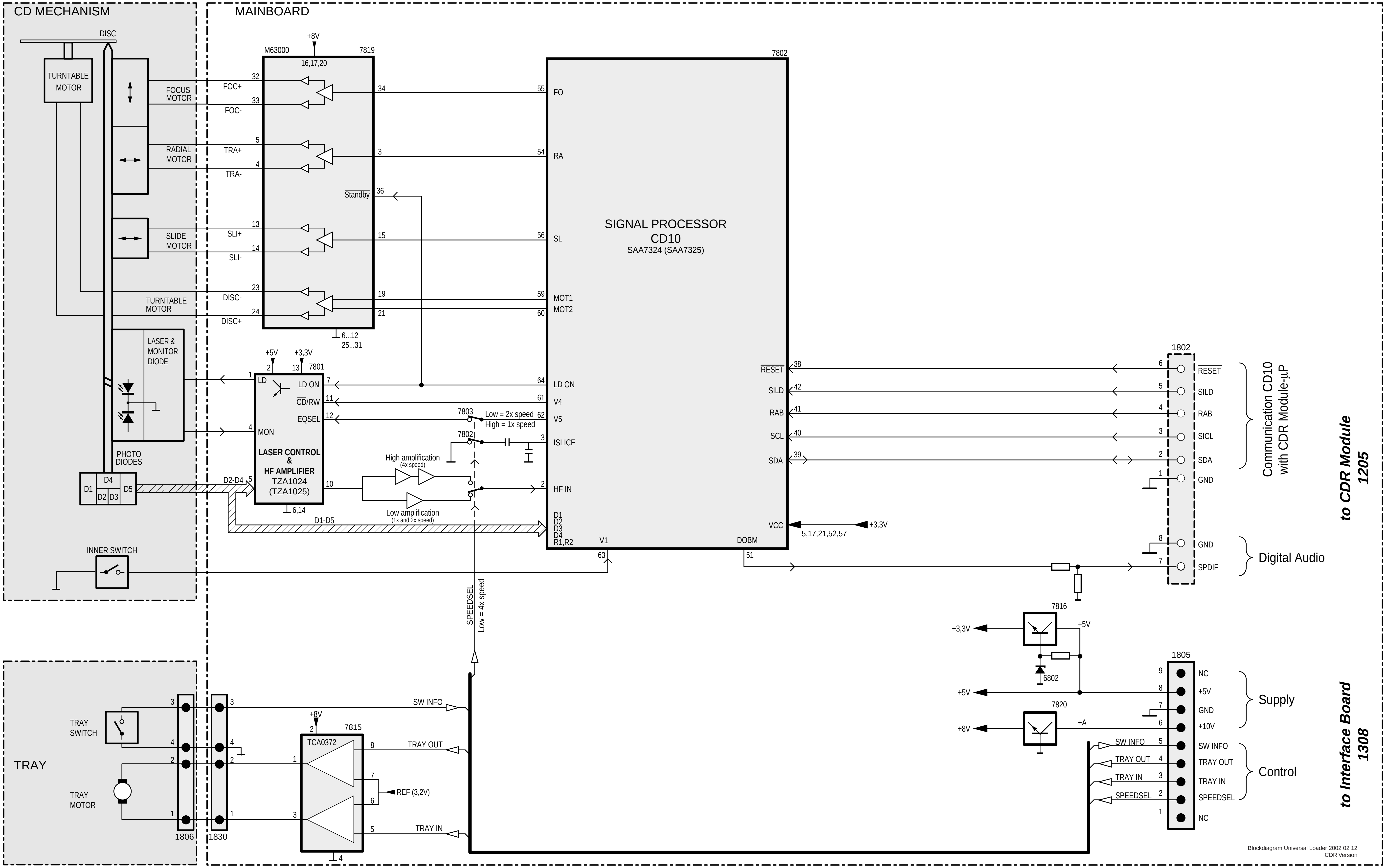
Laser Power Control & HF Amplifier (ADALAS) TZA1024/TZA1025

Pin	*Name*	*Direction*	*Description*
1	LD	HF-preamp → CD-drive	current output to laser diode
2	VCCL	+5V	laser supply voltage
3	CFIL	→ HF-preamp	external filter capacitor
4	MON	CD-drive → HF-preamp	laser monitor diode input
5	DIN	CD-drive → HF-preamp	central diode input
6	GND	GND	ground
7	PWRON	CD10 → HF-preamp	power-on select input
8	CMFB	VrefCD10 (+3,3V / 2)	common mode feedback voltage input
9	RFFB	→ HF-preamp	external RF feedback resistor
10	RFEQO	HF-preamp →	RF amplifier output
11	CDRW	CD10 → HF-preamp	gain select input for CDDA/CDRW
12	EQSEL	CD10 → HF-preamp	equalizer/speed select input
13	VCC2	+3,3V	supply voltage
14	RGADJ	GND	external laser supply gain adjust resistor

SIGNAL PROCESSOR (CD10) SAA7325

Pin	*Name*	*Direction*	*Description*
1	HFREF	→ CD10	comparator common mode input
2	HFIN	→ CD10	comparator signal input
3	ISLICE	CD10 →	current feedback from data slicer
4	VSSA1	GND	analog ground 1
5	VDDA1	+3,3V	analog supply voltage 1
6	IREF	CD10 →	reference current output pin
7	VRIN	CD10 →	reference voltage for servo ADC's
8	D1	CD-drive → CD10	unipolar current input (central diode signal input)
9	D2	CD-drive → CD10	unipolar current input (central diode signal input)
10	D3	CD-drive → CD10	unipolar current input (central diode signal input)
11	D4	CD-drive → CD10	unipolar current input (central diode signal input)
12	R1	CD-drive → CD10	unipolar current input (satellite diode signal input)
13	R2	CD-drive → CD10	unipolar current input (satellite diode signal input)
14	VSSA2	GND	analog ground 2
15	CROUT	CD10 → X-TAL	crystal/resonator output
16	CRIN	X-TAL → CD10	crystal/resonator input
17	VDDA2	+3,3V	analog supply voltage 2
18	LN	CD10 →	DAC left channel differential output - negative
19	LP	CD10 →	DAC left channel differential output - positive
20	VNEG	GND	DAC negative reference input
21	VPOS	+3,3V	DAC positive reference input
22	RN	CD10 →	DAC right channel differential output - negative
23	RP	CD10 →	DAC right channel differential output - positive
24	SELPLL	CD10 →	selects whether internal clock multiplier PLL is used
25	TEST1	GND	test control input 1; this pin should be tied low
26	CL16	CD10 → NPC	16.9344 MHz system clock output
27	DATA	CD10 → NPC	serial data output (3-state)
28	WCLK	CD10 → NPC	word clock output (3-state)
29	SCLK	CD10 → NPC	serial bit clock output (3-state)
30	EF	CD10 → NPC	C2 error flag output (3-state)
31	TEST2	GND	test control input 2; this pin should be tied low
32	KILL	CD10 → Mute control	kill output (programmable; open-drain)
33	VSSD1	GND	digital ground 2
34	V2/V3	CD10 → NPC	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
35	WCLI	NPC → CD10	word clock input (for data loopback to DAC)
36	SDI	NPC → CD10	serial data input (for data loopback to DAC)
37	SCLI	NPC → CD10	serial bit clock input (for data loopback to DAC)
38	RESETn	µP → CD10	power-on reset input (active low)
39	SDA	µP ↔ CD10	microcontroller interface data I/O line (open-drain output)
40	SCL	µP → CD10	microcontroller interface clock line input
41	RAB	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
42	SILD	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
43	STATUS	CD10 →	servo interrupt request line/decoder status register output (open-drain)
44	TEST3	GND	test control input 3; this pin should be tied low
45	RCK	→ CD10	subcode clock input
46	SUB	CD10 →	P-to-W subcode bits output (3-state)
47	SFSY	CD10 → µP	subcode frame sync output (3-state)
48	SBSY	CD10 → NPC	subcode block sync output (3-state)
49	CL11/4	CD10 →	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
50	VSSD2	GND	digital ground 3
51	DOBM	CD10 →	bi-phase mark output (externally buffered; 3-state)
52	VDDD1P	+3,3V	digital supply voltage 2 for periphery
53	CFLG	CD10 →	correction flag output (open-drain)
54	RA	CD10 → servo driver	radial actuator output
55	FO	CD10 → servo driver	focus actuator output
56	SL	CD10 → servo driver	slide control output
57	VDDD2C	+3,3V	digital supply voltage 3 for core
58	VSSD3	GND	digital ground 4
59	MOTO1	CD10 → servo driver	motor output 1; versatile (3-state)
60	MOTO2	CD10 →	motor output 2; versatile (3-state)
61	V4	CD10 → HF-preamp	versatile output pin 4
62	V5	CD10 → HF-preamp	versatile output pin 5
63	V1	innerswitch → CD10	versatile input pin 1
64	LDON	CD10 → HF-preamp	laser drive on output (open-drain)

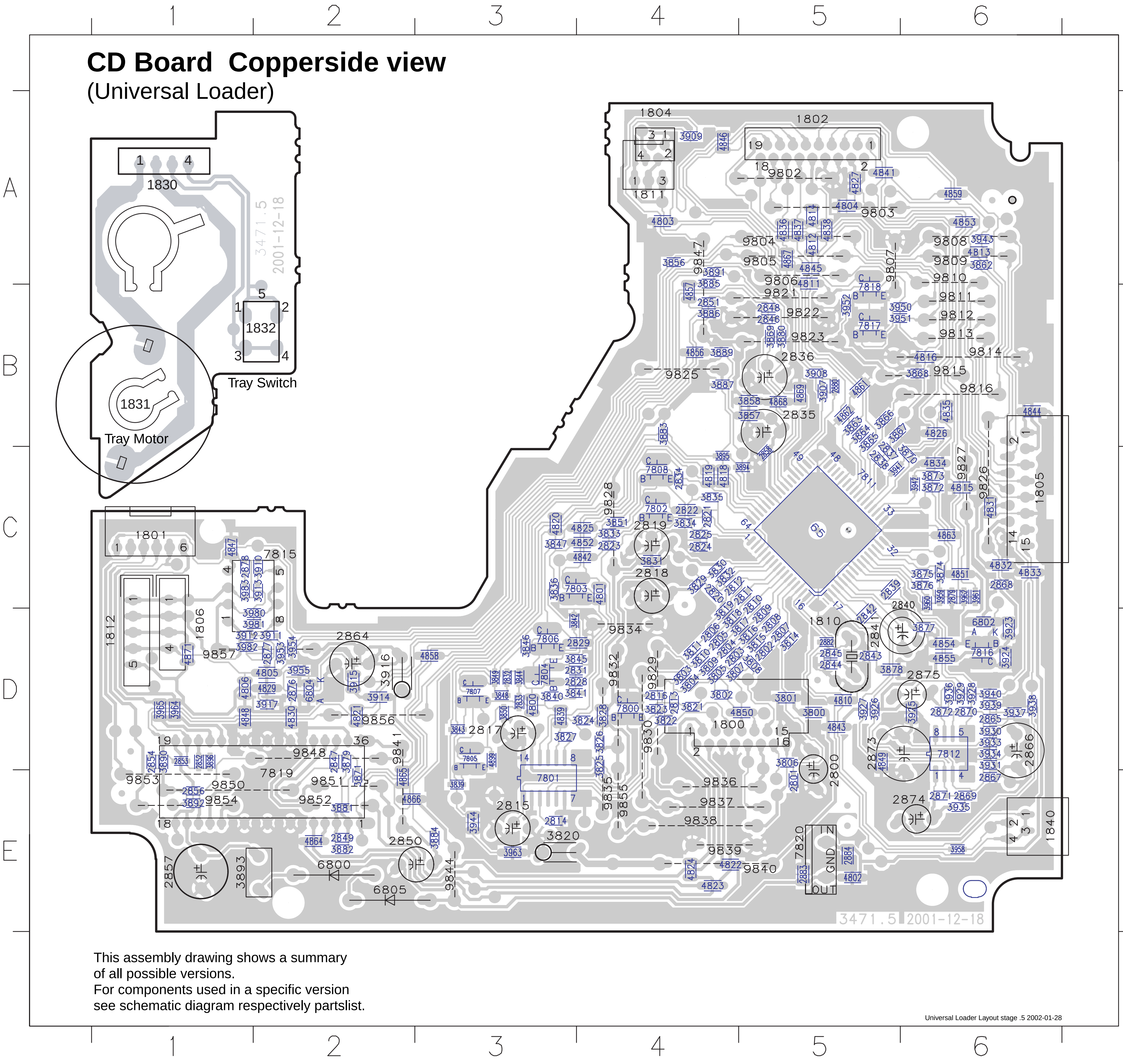
BLOCK DIAGRAM Universal Loader CDR Version


CD MECHANISM
MAINBOARD
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
SLIDE MOTOR
TURNTABLE MOTOR
LASER & MONITOR DIODE
PHOTO DIODES
D1
D2
D3
D4
D5
INNER SWITCH
+8V
M63000
7819
16,17,20
32
FOC+
33
FOC-
5
TRA+
4
TRA-
Standby
36
13
SLI+
14
SLI-
23
DISC-
24
DISC+
34
3
15
19
21
6...12
25...31
7802
55
FO
54
RA
56
SL
59
MOT1
60
MOT2
SIGNAL PROCESSOR
CD10
SAA7324 (SAA7325)
+5V
+3,3V
2
13
7801
1
LD
LD ON
7
CD/RW
11
EQSEL
12
4
MON
LASER CONTROL
&
HF AMPLIFIER
TZA1024
(TZA1025)
D2-D4
5
10
6,14
7803
Low = 2x speed
High = 1x speed
7802
High amplification
(4x speed)
Low amplification
(1x and 2x speed)
D1-D5
64
LD ON
61
V4
62
V5
3
ISLICE
2
HF IN
D1
D2
D3
D4
R1,R2
V1
63
RESET
38
SILD
42
RAB
41
SCL
40
SDA
39
VCC
+3,3V
5,17,21,52,57
DOBM
51
SPEEDSEL
Low = 4x speed
1802
6
RESET
5
SILD
4
RAB
3
SICL
2
SDA
1
GND
8
GND
7
SPDIF
Communication CD10
with CDR Module-µP
Digital Audio
to CDR Module
1205
7816
+3,3V
+5V
6802
1805
9
NC
8
+5V
7
GND
6
+10V
5
SW INFO
4
TRAY OUT
3
TRAY IN
2
SPEEDSEL
1
NC
+5V
7820
+8V
+A
SW INFO
TRAY OUT
TRAY IN
SPEEDSEL
Supply
Control
to Interface Board
1308
TRAY
TRAY SWITCH
TRAY MOTOR
3
4
2
1
1806
1830
SW INFO
+8V
2
7815
TCA0372
1
3
8
TRAY OUT
7
REF (3,2V)
6
5
TRAY IN
4

Blockdiagram Universal Loader 2002 02 12
CDR Version

CD Board Copperside view

(Universal Loader)



This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Universal Loader Layout stage .5 2002-01-28

Mapping SMD parts

2801	E5	3835	C4	3961	C6
2802	D5	3836	C3	3962	C6
2803	D4	3839	E3	3963	E3
2804	D4	3840	D3	3964	D1
2805	D4	3841	D3	3965	D1
2806	D4	3842	D3	3980	D2
2807	D5	3843	D3	3981	D2
2808	D5	3844	D3	3982	D1
2809	D5	3845	D3	3983	C1
2810	C5	3846	D3	4800	D3
2811	C5	3847	C3	4801	C4
2812	C4	3848	D3	4802	E5
2813	D4	3849	D3	4803	A4
2814	E3	3850	D3	4804	A5
2816	D4	3851	C4	4805	D2
2820	C4	3856	A4	4806	D1
2821	C4	3857	B5	4810	D5
2822	C4	3858	B5	4811	A5
2823	C4	3862	A6	4812	A5
2824	C4	3863	B5	4813	A6
2825	C4	3864	B5	4814	A5
2828	D3	3865	B5	4815	C6
2829	D4	3866	B5	4816	B6
2831	D3	3867	B5	4818	C4
2832	D3	3868	B6	4819	C4
2833	D3	3869	B5	4820	C3
2834	C4	3870	C6	4821	D2
2837	C5	3871	E2	4822	E4
2838	C5	3872	C6	4823	E4
2839	C5	3873	C6	4824	E4
2842	D5	3874	C6	4825	C4
2843	D5	3875	C6	4826	B6
2844	D5	3876	C6	4827	A5
2845	D5	3877	D6	4829	D2
2846	B5	3878	D5	4830	D2
2847	D2	3879	D2	4831	C6
2848	B5	3880	B5	4832	C6
2849	E2	3881	E2	4833	C6
2851	B4	3882	E2	4834	C6
2852	D1	3883	B4	4835	B6
2853	D1	3884	E3	4836	A5
2854	D1	3885	A4	4837	A5
2856	E1	3886	B4	4838	A5
2858	C5	3887	B4	4839	D3
2865	D6	3889	B4	4841	A5
2867	E6	3890	D1	4842	C4
2868	C6	3891	A4	4843	D5
2869	E6	3892	E1	4844	B6
2870	D6	3894	C5	4845	A5
2871	E6	3895	C4	4846	A4
2872	D6	3896	D1	4847	C1
2876	D2	3907	B5	4848	D1
2877	D2	3908	B5	4849	D5
2878	C1	3909	A4	4850	D5
2879	C6	3910	C2	4851	C6
2880	B5	3911	D2	4852	C4
2882	D5	3912	D1	4853	A6
2883	E5	3913	C2	4854	D6
2884	E5	3914	D2	4855	D6
3800	D5	3915	D2	4856	B4
3801	D5	3917	D2	4857	B4
3802	D4	3923	D6	4858	D3
3803	D4	3924	D6	4859	A6
3804	D4	3925	D6	4861	B5
3805	D4	3926	D5	4862	B5
3806	D5	3927	D5	4863	C6
3807	D4	3928	D6	4864	E2
3808	D5	3929	D6	4865	E2
3809	D4	3930	D6	4866	E2
3810	D4	3931	D6	4867	A5
3811	D4	3933	D6	4868	B5
3814	D5	3934	D6	4869	B5
3815	D5	3935	E6	4871	D1
3816	D5	3936	D6	4899	D3
3817	D5	3937	D6	6802	D6
3818	D4	3938	D6	6804	D2
3819	D4	3939	D6	7800	D4
3821	D4	3940	D6	7801	E3
3822	D4	3941	C5	7802	C4
3823	D4	3942	C6	7803	C3
3824	D4	3943	A6	7804	D3
3825	D4	3944	E3	7805	D3
3826	D4	3950	B5	7806	D3
3827	D3	3951	B5	7807	D3
3828	D4	3952	B5	7808	C4
3829	C4	3953	D2	7811	C5
3830	C4	3954	D2	7812	D6
3831	C4	3955	D2	7816	D6
3832	C4	3958	E6	7817	B5
3833	C4	3959	C6	7818	B5
3834	C4	3960	C6		

HMC parts

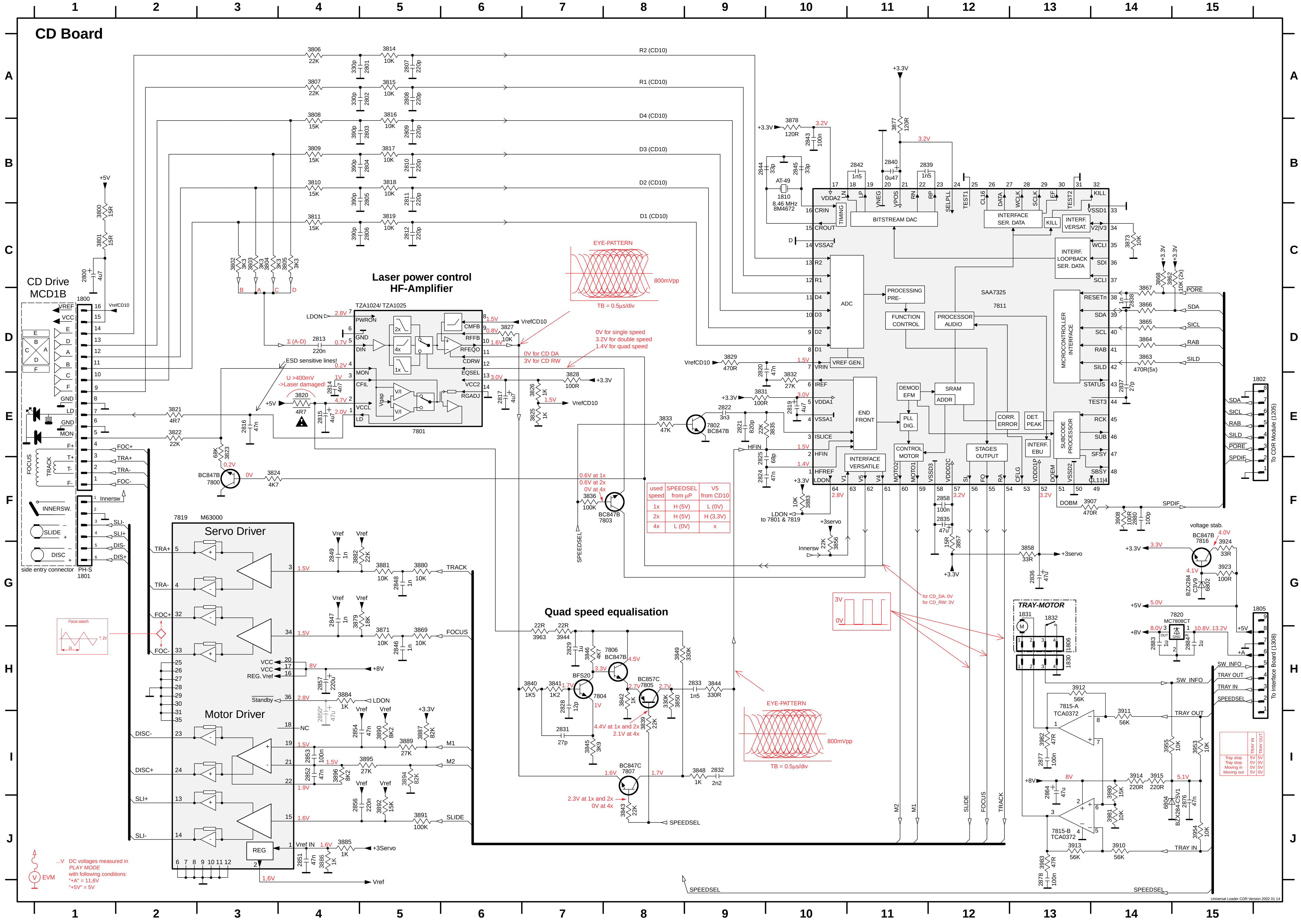
1800	D4
1801	C1
1802	A5
1804	A4
1805	C6
1806	D1
1810	D5
1811	A4
1812	D1
1830	A1
1831	B1
1832	B1
1840	E6
2800	D5
2815	E3
2817	D3
2818	C4
2819	C4
2835	B5
2836	B5
2840	D6
2841	D5
2850	E3
2857	E1
2864	D2
2866	D6
2873	D5
2874	E6
2875	D6
3820	E3
3893	E2
3916	D2
6800	E2
6805	E2
7815	C1
7819	E2
7820	E5
9802	A5
9803	A5
9804	A5
9805	A5
9806	A5
9807	A6
9808	A6
9809	A6
9810	A6
9811	B6
9812	B6
9813	B6
9814	B6
9815	B6
9816	B6
9821	B5
9822	B5
9823	B5
9825	B4
9826	C6
9827	C6
9828	C4
9829	D4
9830	D4
9832	D4
9834	D4
9835	D4
9836	E4
9837	E4
9838	E4
9839	E4
9840	E4
9841	E2
9844	E3
9847	B4
9848	D2
9850	E1
9851	E2
9852	E2
9853	D1
9854	E1
9855	E4
9856	D2
9857	D2

1800	D1	1830	H13	2803	B5	2809	B5	2815	E4	2821	E9	2831	I7	2838	D14	2845	B10	2851	J4
1801	G1	1831	H13	2804	B5	2810	B5	2816	E3	2822	E9	2832	I9	2839	B11	2846	H5	2852	I4
1802	E15	1832	H13	2805	B5	2811	B5	2817	E6	2824	F10	2833	H9	2840	B11	2847	G4	2853	I4
1805	H15	2800	C1	2806	C5	2812	C5	2818	E7	2825	F10	2835	F12	2842	B11	2848	G5	2854	I5
1806	H13	2801	A5	2807	A5	2813	D4	2819	E10	2828	H7	2836	G13	2843	B10	2849	G4	2856	J5
1810	B10	2802	A5	2808	A5	2814	E4	2820	D10	2829	H7	2837	E14	2844	B10	2850	I4	2857	H4

2858	F12	2880	F14	3803	C3	3809	B4	3817	B5	3823	E3	3829	D9	3839	I8	3845	I7	3857	G12
2864	I13	2883	H14	3804	C3	3810	B4	3818	B5	3824	F3	3831	E9	3840	H7	3846	H7	3858	G13
2868	I15	2884	H15	3805	C4	3811	C4	3819	C5	3825	E7	3832	E10	3841	H7	3848	I9	3862	C15
2876	J15	3800	C1	3806	A4	3814	A5	3820	E4	3826	E7	3833	E8	3842	H8	3849	H8	3863	D14
2877	I13	3801	C1	3807	A4	3815	A5	3821	E2	3827	D6	3835	E10	3843	J8	3850	H8	3864	D14
2878	J13	3802	C3	3808	B4	3816	B5	3822	E2	3828	E7	3836	F7	3844	H9	3856	G10	3865	D14

3866	D14	3877	B11	3883	F10	3890	I5	3907	F13	3914	I14	3954	J15	3983	J13	7803	F8	7815A	I13
3867	D14	3878	B10	3884	H4	3891	J5	3908	F14	3915	I14	3955	I15	6802	G15	7804	H7	7815B	J13
3868	C14	3879	G5	3885	J4	3892	J5	3910	J14	3923	G15	3963	H7	6804	J15	7805	H8	7816	G15
3869	H5	3880	G5	3886	J4	3894	I5	3911	I14	3924	G15	3980	J14	7800	F3	7806	H8	7819	F3
3871	H5	3881	G5	3887	I5	3895	I5	3912	H13	3944	H7	3981	J14	7801	E5	7807	I8	7820	H15
3873	B14	3882	G5	3889	I5	3896	I4	3913	J13	3953	I15	3982	I13	7802	E9	7811	D12		

CD Board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12
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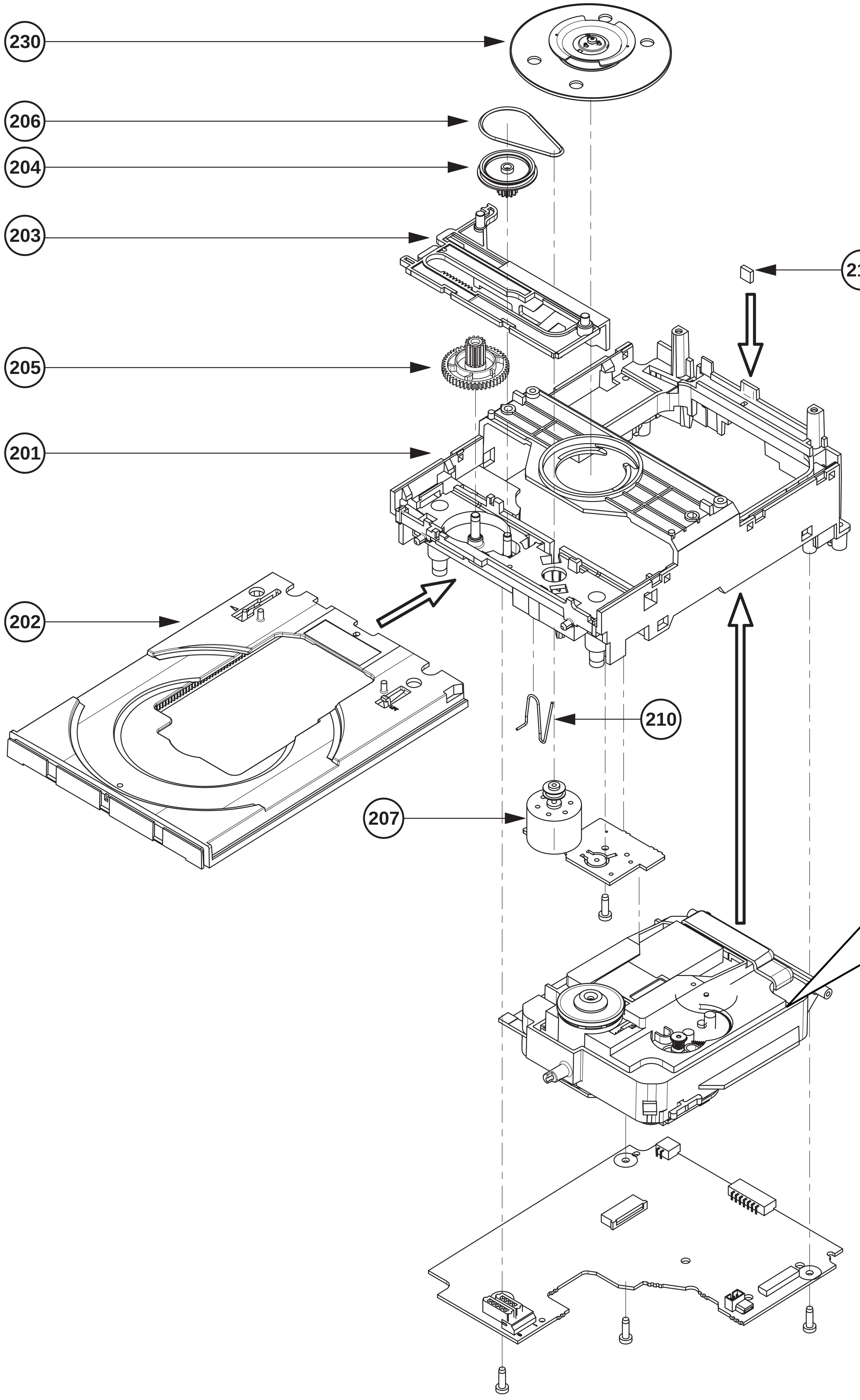
14
15
A
B
C
D
E
F
G
H
I
J
CD Drive
MCD1B
side entry connector
PH-S
1800
1801
VREF
VCC
GND
LD
MON
FOCUS
TRACK
INNERSW.
SLIDE
DISC
Innersw
SLI-
SLI+
DIS-
DIS+
FOC+
TRA+
TRA-
FOC-
Laser power control
HF-Amplifier
TZA1024/ TZA1025
7801
PWRON
GND
DIN
MON
CFIL
VCCL
LD
CMFB
RFFB
RFEQO
CDRW
EQSEL
VCC2
RGADJ
ESD sensitive lines!
U >400mV
->Laser damaged!
BC847B
7800
EYE-PATTERN
800mVpp
TB = 0.5µs/div
0V for single speed
3.2V for double speed
1.4V for quad speed
0V for CD DA
3V for CD RW
R2 (CD10)
R1 (CD10)
D4 (CD10)
D3 (CD10)
D2 (CD10)
D1 (CD10)
SAA7325
7811
BITSTREAM DAC
INTERFACE SER. DATA
INTERF. VERSAT.
INTERF. LOOPBACK SER. DATA
ADC
PRE- PROCESSING
FUNCTION CONTROL
AUDIO PROCESSOR
MICROCONTROLLER INTERFACE
VREF GEN.
FRONT END
DEMOD EFM
SRAM
ADDR
PLL DIG.
CONTROL MOTOR
INTERFACE VERSATILE
CORR. ERROR
DET. PEAK
INTERF. EBU
SUBCODE PROCESSOR
OUTPUT STAGES
AT-49
1810
8.46 MHz
8M4672
+3.3V
+5V
+8V
+3servo
VrefCD10
LDON
SPEEDSEL
Servo Driver
Motor Driver
7819
M63000
TRACK
FOCUS
SLIDE
M1
M2
REG
Standby
REG. Vref
NC
DISC-
DISC+
SLI+
SLI-
Focus search
used speed
SPEEDSEL from µP
V5 from CD10
1x
H (5V)
L (0V)
2x
H (5V)
H (3,3V)
4x
L (0V)
x
Quad speed equalisation
BFS20
7804
BC847B
7806
BC857C
7805
BC847C
7807
2.3V at 1x and 2x
0V at 4x
4.4V at 1x and 2x
2.1V at 4x
TRAY-MOTOR
1831
1832
1806
1830
voltage stab.
BC847B
7816
BZX284
C3V9
6802
7820
MC7808CT
BZX284-C5V1
6804
7815-A
TCA0372
7815-B
TCA0372
for CD_DA: 0V
for CD_RW: 3V
Tray stop
Tray stop
Moving in
Moving out
TRAY IN
TRAY OUT
1802
To CDR Module (1205)
SDA
SICL
RAB
SILD
PORE
SPDIF
1805
To Interface Board (1308)
SW INFO
SW_INFO
TRAY OUT
TRAY IN
SPEEDSEL
EVM
...V DC voltages measured in PLAY MODE
with following conditions:
"+A" = 11,6V
"+5V" = 5V

Exploded view *UNIVERSAL LOADER*


230
206
204
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211
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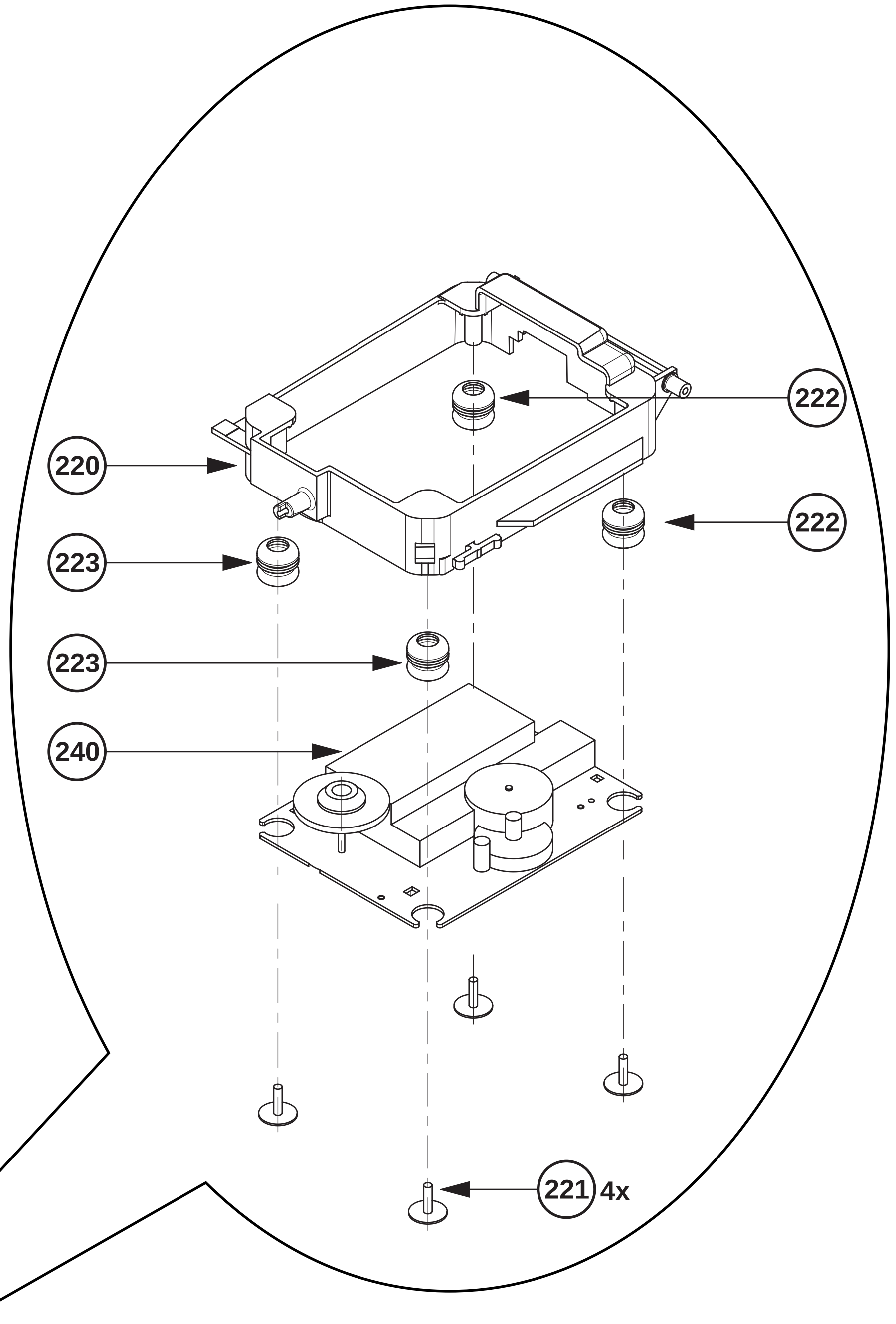
201
202
210
207

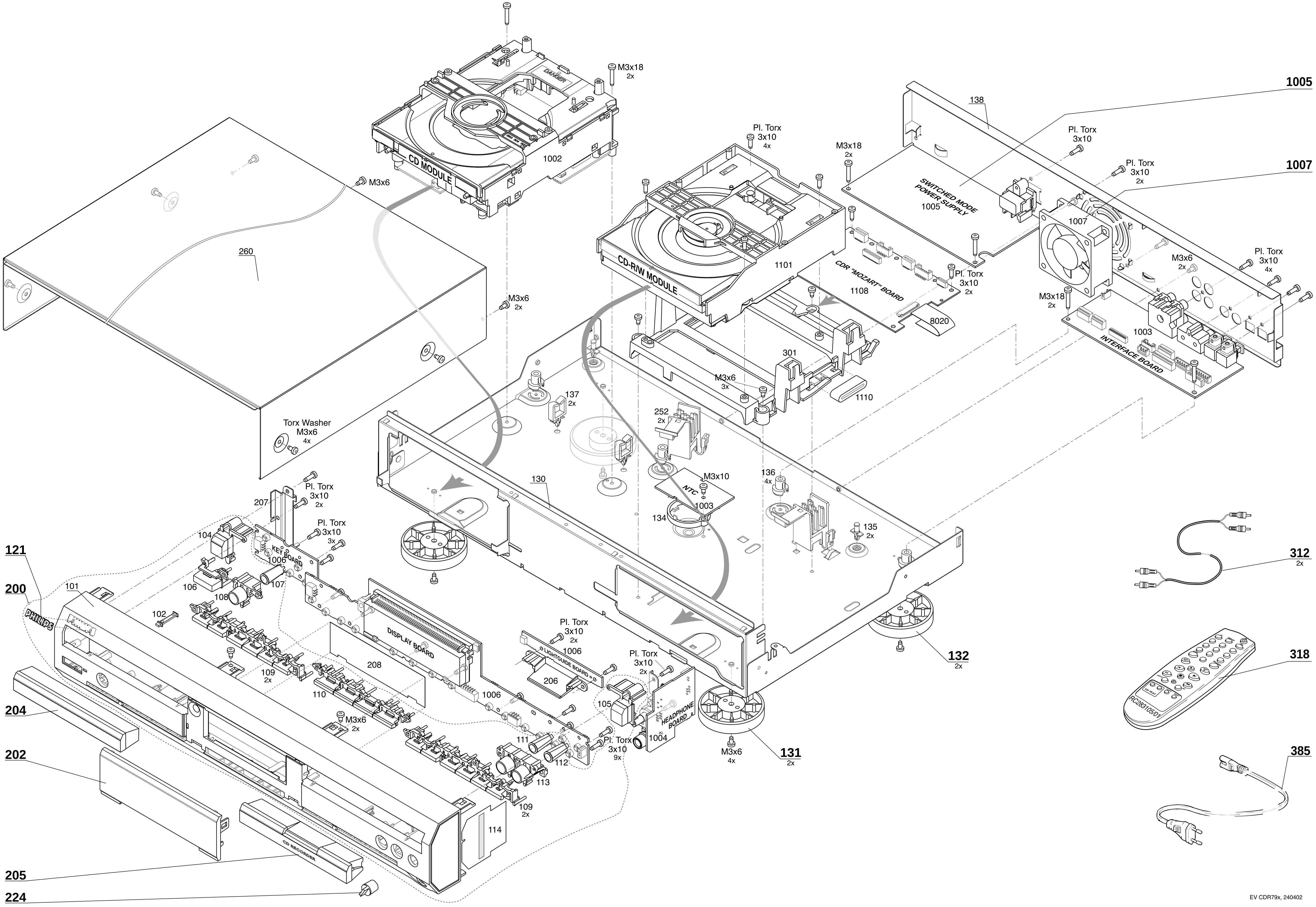

222
220
222
223
223
240
221 4x

MECHANICAL PARTS

202	3103 304 71780	DRAWER
203	3103 304 71800	SLIDER
204	3103 304 71820	PULLEY GEARWHEEL
205	3103 304 71830	GEARWHEEL
206	3103 304 71910	DRIVING BELT
207	3103 308 54160	MOTOR ASSY
210	3103 301 06660	SPRING SUPPORT
220	3103 304 71790	SUPPORT CD
222	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
223	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
230	3103 308 11940	CLAMPER ASSY DA11
240	3103 309 05350	CD DRIVE MCD1B

Only those parts of which a service code number is stated are normal service parts.

EXPLODED VIEW / *apparatus*


M3x18
2x
DANGER
1002
CD MODULE
M3x6
260
M3x6
2x
Torx Washer
M3x6
4x
1005
138
Pl. Torx
3x10
Pl. Torx
3x10
2x
1007
SWITCHED MODE
POWER SUPPLY
1005
1007
Pl. Torx
3x10
4x
Pl. Torx
3x10
4x
M3x18
2x
CD-R/W MODULE
1101
CDR "MOZART" BOARD
1108
Pl. Torx
3x10
2x
8020
M3x6
2x
Pl. Torx
3x10
4x
M3x18
2x
1003
INTERFACE BOARD
301
M3x6
3x
1110
137
2x
252
2x
130
M3x10
NTC
1003
134
136
4x
135
2x
207
Pl. Torx
3x10
2x
Pl. Torx
3x10
3x
104
KEY BOARD
1006
107
106
108
121
200
101
PHILIPS
102
DISPLAY BOARD
208
109
2x
110
Pl. Torx
3x10
2x
1006
LIGHTGUIDE BOARD
206
1006
Pl. Torx
3x10
2x
105
HEADPHONE
BOARD
1004
M3x6
2x
111
112
113
Pl. Torx
3x10
9x
109
2x
114
204
202
CD RECORDER
205
224
131
2x
M3x6
4x
132
2x
312
2x
318
RC283105/01
385

MECHANICAL PARTSLIST *APPARATUS*

MECHANICAL PARTS

121	3104 120 00290	WORDMARK PHILIPS
131	4822 462 11174	FOOT, SILVER
132	4822 462 42158	FOOT, BLACK
200	3103 308 12840	FRONT ASSY CDR795, BLACK
200	3103 308 12850	FRONT ASSY CDR796, SILVER
202	3103 308 12590	DISPLAY-WINDOW, PRINTED
204	3103 308 12620	ORNAMENT.COVER CD TRAY, CDR795
204	3103 308 12960	ORNAMENT.COVER CD TRAY, CDR796
205	3103 308 12630	ORNAMENT.COVER CDR TRAY,CDR795
205	3103 308 12970	ORNAMENT.COVER CDR TRAY,CDR796
224	3103 304 72550	KNOB VOLUME, CDR795
224	3103 308 12980	KNOB VOLUME, CDR796

MISCELLANEOUS

312	3103 308 92610	AUDIO CABLE STEREO CINCH 1.5m
318	3139 238 01920	REMOTE CONTR. RC283105/01 BLACK
385 ⚠	2422 070 98151	MAINS CORD, EUROPE
385 ⚠	2422 070 98152	MAINS CORD, USA
1005 ⚠	3103 308 53880	POWER BOARD, SMPS CDR8xx/00
1005 ⚠	3103 308 53890	POWER BOARD, SMPS CDR8xx/17
1007	3103 308 52950	FAN, KD120 6PTS 3 - C112
8003	4822 320 12703	FLEXFOIL CABLE, 7P, 140mm, BD
8005	3103 308 92970	FLEXFOIL CABLE 6P, 120mm AD
8006	3103 308 92980	FLEXFOIL CABLE 4P, 60mm BD
8008	3139 110 34680	FLEXFOIL CABLE, 6P, 340mm BD
8012	3139 110 34680	FLEXFOIL CABLE, 6P, 340mm BD
8014	3103 308 93000	FLEXFOIL CABLE, 9P, 360mm AD
8015	3139 110 53540	FLEXFOIL CABLE, 8P, 340mm AD
8016	3103 308 93020	FLEXFOIL CABLE, 15P, 360mm AD
8020	3104 157 11780	FLEXFOIL CABLE, 36P, 77mm BD

MECHANICAL PARTSLIST *CD LOADER*

202	3103 304 71780	DRAWER
203	3103 304 71800	SLIDER
204	3103 304 71820	PULLEY GEARWHEEL
205	3103 304 71830	GEARWHEEL
206	3103 304 71910	DRIVING BELT
207	3103 308 54160	MOTOR ASSY
210	3103 301 06660	SPRING SUPPORT
220	3103 304 71790	SUPPORT CD
222	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
223	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
230	3103 308 11940	CLAMPER ASSY DA11
240	3103 309 05350	CD DRIVE MCD1B

Only those parts of which a service code number is stated are normal service parts.

ELECTRICAL PARTSLIST *DISPLAY BOARD*

MISCELLANEOUS

1413	4822 265 11515	FFC-CONNECTOR, 8P, TOP ENTRY
1414	2422 025 16979	FFC-CONNECTOR 4P, SIDE ENTRY
1416	4822 265 11207	FFC-CONNECTOR, 6P, SIDE ENTRY
1417	4822 265 11207	FFC-CONNECTOR, 6P, SIDE ENTRY
1418	4822 265 10979	FFC-CONNECTOR, 15P, SIDE ENTRY
1422	4822 276 13114	TACT SWITCH
1423	4822 276 13114	TACT SWITCH
1424	4822 276 13114	TACT SWITCH
1425	4822 276 13114	TACT SWITCH
1426	4822 276 13114	TACT SWITCH
1427	4822 276 13114	TACT SWITCH
1428	4822 276 13114	TACT SWITCH
1429	4822 276 13114	TACT SWITCH
1432	4822 276 13114	TACT SWITCH
1433	4822 276 13114	TACT SWITCH
1434	4822 276 13114	TACT SWITCH
1435	4822 276 13114	TACT SWITCH
1436	4822 276 13114	TACT SWITCH
1438	4822 276 13114	TACT SWITCH
1439	4822 276 13114	TACT SWITCH
1441	4822 276 13114	TACT SWITCH
7402	3103 308 54540	DISPLAY, FTD CDR79x
7403	4822 130 10165	GP1U28XP, IR EYE

CAPACITORS

2400 ©	2238 586 59812	100nF	10%	50V
2401 ©	4822 126 14238	2,2nF	10%	50V
2404 ©	5322 126 11578	1nF	10%	63V
2405 ©	5322 126 11578	1nF	10%	63V
2406 ©	2238 586 59812	100nF	10%	50V
2407 ©	2238 586 59812	100nF	10%	50V
2408 ©	4822 122 33752	15pF	5%	50V
2409 ©	4822 122 33752	15pF	5%	50V
2410 ©	5322 126 11583	10nF	10%	63V
2411 ©	3198 017 44740	470nF	20%	10V
2412 ©	5322 126 11583	10nF	10%	63V
2413	3198 029 52290	22µF	20%	50V
2414	4822 124 41751	47µF	20%	16V
2415	4822 124 81286	47µF	20%	16V
2416 ©	2238 586 59812	100nF	10%	50V
2418	4822 124 40433	47µF	20%	25V
2420 ©	5322 126 11583	10nF	10%	63V
2422 ©	5322 126 11578	1nF	10%	63V
2423 ©	4822 122 33777	47pF	5%	63V
2424 ©	4822 122 33777	47pF	5%	63V
2426 ©	4822 122 33777	47pF	5%	63V

RESISTORS

3400 ©	4822 051 30683	68kΩ	5%	0,06W
3401 ©	4822 051 30683	68kΩ	5%	0,06W
3402 ©	4822 051 30683	68kΩ	5%	0,06W
3403 ©	4822 051 30683	68kΩ	5%	0,06W
3404 ©	4822 051 30683	68kΩ	5%	0,06W
3405 ©	4822 051 30683	68kΩ	5%	0,06W
3406 ©	4822 051 30103	10kΩ	5%	0,06W
3408 ©	4822 051 30683	68kΩ	5%	0,06W
3410 ©	4822 051 30683	68kΩ	5%	0,06W
3412 ©	4822 051 30683	68kΩ	5%	0,06W
3413 ©	4822 051 30683	68kΩ	5%	0,06W
3420 ©	4822 051 30102	1kΩ	5%	0,06W
3421 ©	4822 051 30102	1kΩ	5%	0,06W
3423 ©	4822 051 30221	220Ω	5%	0,06W

RESISTORS

3424 ©	4822 051 30101	100Ω	5%	0,06W
3425 ©	4822 051 30471	470Ω	5%	0,06W
3426 ©	4822 051 30102	1kΩ	5%	0,06W
3427 ©	4822 051 30471	470Ω	5%	0,06W
3428 ©	4822 051 30471	470Ω	5%	0,06W
3429 ©	4822 051 30471	470Ω	5%	0,06W
3430 ©	4822 051 30471	470Ω	5%	0,06W
3431 ©	4822 051 30471	470Ω	5%	0,06W
3433 ©	4822 051 30221	220Ω	5%	0,06W
3434 ©	4822 051 30471	470Ω	5%	0,06W
3435 ©	4822 051 30471	470Ω	5%	0,06W
3436 ©	4822 051 30471	470Ω	5%	0,06W
3437 ©	4822 051 30471	470Ω	5%	0,06W
3438 ©	4822 051 30101	100Ω	5%	0,06W
3439 ©	4822 051 30103	10kΩ	5%	0,06W
3440 ©	4822 051 30102	1kΩ	5%	0,06W
3443 ©	4822 051 30471	470Ω	5%	0,06W
3444 ©	4822 051 30471	470Ω	5%	0,06W
3445 ©	4822 051 30471	470Ω	5%	0,06W
3446 ©	4822 051 30471	470Ω	5%	0,06W
3447 ©	4822 051 30471	470Ω	5%	0,06W
3448 ©	4822 051 30471	470Ω	5%	0,06W
3449 ©	4822 051 30272	2,7kΩ	5%	0,06W
3450 ©	4822 051 30221	220Ω	5%	0,06W
3451 ©	4822 051 30271	270Ω	5%	0,06W
3452 ©	4822 051 30391	390Ω	5%	0,06W
3453 ©	4822 051 30561	560Ω	5%	0,06W
3454 ©	4822 117 12968	820Ω	5%	0,06W
3455 ©	4822 117 11817	1,2kΩ	1%	0,06W
3456 ©	4822 117 12903	1,8kΩ	1%	0,06W
3457 ©	4822 051 30392	3,9kΩ	5%	0,06W
3458 ©	4822 051 30103	10kΩ	5%	0,06W
3459 ©	4822 051 30151	150Ω	5%	0,06W
3460 ©	4822 051 30272	2,7kΩ	5%	0,06W
3461 ©	4822 051 30221	220Ω	5%	0,06W
3462 ©	4822 051 30271	270Ω	5%	0,06W
3463 ©	4822 051 30391	390Ω	5%	0,06W
3464 ©	4822 051 30561	560Ω	5%	0,06W
3465 ©	4822 051 30221	220Ω	5%	0,06W
3466 ©	4822 051 30271	270Ω	5%	0,06W
3467 ©	4822 051 30391	390Ω	5%	0,06W
3471 ©	4822 051 30102	1kΩ	5%	0,06W
3472 ©	4822 117 12891	220kΩ	1%	0,06W
3473 ©	4822 117 12891	220kΩ	1%	0,06W
3474 ▲	4822 052 10228	2,2Ω	5%	0,33W
3475 ©	4822 051 30103	10kΩ	5%	0,06W
3477 ©	4822 051 30181	180Ω	5%	0,06W
3478 ©	4822 051 30103	10kΩ	5%	0,06W
3479 ©	4822 051 30151	150Ω	5%	0,06W
3480 ©	4822 051 30151	150Ω	5%	0,06W
3484 ©	4822 051 30471	470Ω	5%	0,06W
3485 ©	4822 051 30471	470Ω	5%	0,06W
3486 ©	4822 051 30472	4,7kΩ	5%	0,06W
3487 ©	4822 051 30472	4,7kΩ	5%	0,06W
3488 ©	4822 051 30682	6,8kΩ	5%	0,06W
3494 ©	4822 051 30272	2,7kΩ	5%	0,06W
3495	4822 050 21003	10kΩ	2%	0,25W
3496 ©	4822 051 30472	4,7kΩ	5%	0,06W
3499 ©	4822 051 30102	1kΩ	5%	0,06W
3505 ©	4822 051 30181	180Ω	5%	0,06W
3506 ©	4822 051 30103	10kΩ	5%	0,06W
3509 ©	4822 051 30103	10kΩ	5%	0,06W
3510 ©	4822 051 30103	10kΩ	5%	0,06W

ELECTRICAL PARTSLIST *DISPLAY BOARD*

RESISTORS

3513 ©	4822 051 30471	470Ω	5%	0,06W
3516 ▲	4822 052 10228	2,2Ω	5%	0,33W
3517 ©	4822 051 30472	4,7kΩ	5%	0,06W
3518 ©	4822 051 30472	4,7kΩ	5%	0,06W
3519 ©	4822 051 30472	4,7kΩ	5%	0,06W
3520 ©	4822 051 30472	4,7kΩ	5%	0,06W
3521 ©	4822 051 30101	100Ω	5%	0,06W
3522 ©	4822 051 30101	100Ω	5%	0,06W
3523 ©	4822 051 30101	100Ω	5%	0,06W
3524 ©	4822 051 30101	100Ω	5%	0,06W
4401 ©	4822 051 20008	CHIP JUMPER 0805		
4402 ©	4822 051 30008	CHIP JUMPER 0603		
4404 ©	4822 051 30008	CHIP JUMPER 0603		
4405 ©	4822 051 30008	CHIP JUMPER 0603		
4406 ©	4822 051 30008	CHIP JUMPER 0603		
4408 ©	4822 051 30008	CHIP JUMPER 0603		
4409 ©	4822 051 30008	CHIP JUMPER 0603		
4410 ©	4822 051 30008	CHIP JUMPER 0603		
4411 ©	4822 051 30008	CHIP JUMPER 0603		

COILS

1400	2422 540 98526	RESONATOR 10MHz
5400	4822 157 62552	2,2µH

DIODES

6400	3198 010 53380	BZX79-B3V3
6429 ©	9322 147 85685	LST770-KL, RED
6431 ©	9322 147 85685	LST770-KL, RED
6434	4822 130 30621	1N4148

TRANSISTORS

7405 ©	5322 130 60159	BC846B
7406 ©	5322 130 60159	BC846B
7412 ©	5322 130 60159	BC846B
7413 ©	5322 130 60159	BC846B
7416 ©	5322 130 60159	BC846B

INTEGRATED CIRCUITS

7409 ©	9965 000 04931	M24C01-WMN6, EEPROM
7414 ©	3103 308 84560	M30218FCFP, uP FLASH PROG. V12

ELECTRICAL PARTSLIST *KEY BOARD*

MISCELLANEOUS

0060	4822 265 11207	FFC-CONNECTOR, 6P, SIDE ENTRY
1450	4822 276 13114	TACT SWITCH
1451	4822 276 13114	TACT SWITCH
1452	4822 276 13114	TACT SWITCH
1453	4822 276 13114	TACT SWITCH
1454	4822 276 13114	TACT SWITCH

RESISTORS

3550 ©	4822 117 12968	820Ω	5%	0,06W
3551 ©	4822 117 11817	1,2kΩ	1%	0,06W
3552 ©	4822 117 12903	1,8kΩ	1%	0,06W
3553 ©	4822 051 30392	3,9kΩ	5%	0,06W
3554 ©	4822 051 30103	10kΩ	5%	0,06W
3555 ©	4822 051 30391	390Ω	5%	0,06W
3556 ©	4822 117 13501	82Ω	5%	0,6W
3557	4822 050 21003	10kΩ	2%	0,25W
3558	4822 050 21003	10kΩ	2%	0,25W

DIODES

6450 ©	9322 147 85685	LST770-KL, RED
6451 ©	9322 147 83685	LBT776-K1L1, BLUE

TRANSISTORS

7450 ©	5322 130 60159	BC846B
7451 ©	5322 130 60159	BC846B

ELECTRICAL PARTSLIST *LIGHTGUIDE BOARD*

MISCELLANEOUS

1460	2422 025 16979	FFC-CONNECTOR, 4P, SIDE ENTRY

RESISTORS

3570 ©	4822 051 30479	47Ω	5%	0,06W
3571 ©	4822 051 30479	47Ω	5%	0,06W
3572 ©	4822 051 30479	47Ω	5%	0,06W
3573 ©	4822 051 30121	120Ω	5%	0,06W
3574 ©	4822 051 30121	120Ω	5%	0,06W
3575 ©	4822 051 30121	120Ω	5%	0,06W
3576 ©	4822 051 30121	120Ω	5%	0,06W
4461 ©	4822 051 30008	CHIP JUMPER 0603		
4463 ©	4822 051 30008	CHIP JUMPER 0603		

DIODES

6462 ©	9322 147 85685	LST770-KL, RED
6463 ©	9322 147 83685	LBT776-K1L1, BLUE
6464 ©	9322 147 85685	LST770-KL, RED
6465 ©	9322 147 83685	LBT776-K1L1, BLUE
6466 ©	9322 147 85685	LST770-KL, RED
6468 ©	9322 147 83685	LBT776-K1L1, BLUE
6469 ©	9322 147 85685	LST770-KL, RED

ELECTRICAL PARTSLIST *HEADPHONE BOARD*

MISCELLANEOUS

1500	4822 265 11207	FFC-CONNECTOR, 6P, SIDE ENTRY
1501	4822 267 31453	HEADPHONE SOCKET 6,3mm
1505	2422 128 03032	TACT SWITCH

CAPACITORS

2500	4822 124 81286	47µF	20%	16V
2501	4822 124 12032	4,7µF	20%	50V
2502 ©	4822 126 13881	470pF	5%	50V
2503 ©	5322 126 11579	3,3nF	10%	63V
2504 ©	4822 126 14315	390pF	5%	50V
2505	4822 124 81286	47µF	20%	16V
2506	4822 124 12032	4,7µF	20%	50V
2507 ©	2238 586 59812	100nF	10%	50V
2508 ©	4822 126 13881	470pF	5%	50V
2509 ©	5322 126 11579	3,3nF	10%	63V
2510 ©	4822 126 14315	390pF	5%	50V
2511 ©	2238 586 59812	100nF	10%	50V
2512 ©	2238 586 59812	100nF	10%	50V
2513 ©	2238 586 59812	100nF	10%	50V

RESISTORS

3500 ⚠	4822 052 10109	10Ω	5%	NFR
3501 ©	4822 051 30102	1kΩ	5%	0,06W
3502	4822 101 21199	POTMETER 2x10KΩ		
3503 ©	4822 117 12139	22Ω	5%	0,06W
3504 ©	4822 051 30101	100Ω	5%	0,06W
3505 ©	4822 051 30103	10kΩ	5%	0,06W
3506 ©	4822 051 30103	10kΩ	5%	0,06W
3507 ⚠	4822 052 10109	10Ω	5%	NFR
3508 ©	4822 051 30472	4,7kΩ	5%	0,06W
3509 ©	4822 051 30102	1kΩ	5%	0,06W
3511 ©	4822 117 12139	22Ω	5%	0,06W
3512 ©	4822 051 30101	100Ω	5%	0,06W
3513 ©	4822 051 30103	10kΩ	5%	0,06W
3514 ©	4822 051 30103	10kΩ	5%	0,06W
3515 ©	4822 051 30472	4,7kΩ	5%	0,06W
3516 ©	4822 051 30561	560Ω	5%	0,06W
4503 ©	4822 051 30008	CHIP JUMPER 0603		
4506 ©	4822 051 30008	CHIP JUMPER 0603		
4509 ©	4822 051 30008	CHIP JUMPER 0603		

INTEGRATED CIRCUITS

7500 ©	4822 209 31378	NJM4556M, 2-FOLD OP-AMP.

ELECTRICAL PARTSLIST *INTERFACE BOARD*

MISCELLANEOUS

1303	4822 267 10953	FFC-CONNECTOR, 7P, TOP ENTRY
1307	4822 265 10981	FFC-CONNECTOR, 15P, TOP ENTRY
1308	2422 025 14518	FFC-CONNECTOR, 9P, TOP ENTRY
1314	4822 267 31448	CINCH SOCKET, 2-FOLD
1315	4822 265 11151	CINCH SOCKET, 4-FOLD
1316	4822 267 10731	FFC-CONNECTOR, 6P, TOP ENTRY
7312	4822 218 11487	OPTICAL CONNECTOR, GP1F32R

CAPACITORS

2302	4822 124 40196	220µF	20%	16V
2304	4822 124 40196	220µF	20%	16V
2314	4822 124 80791	470µF	20%	16V
2315	4822 124 40207	100µF	20%	25V
2316 ©	2238 586 59812	100nF	10%	50V
2318	4822 121 70654	2,2nF	10%	50V
2319	4822 121 70654	2,2nF	10%	50V
2320 ©	2238 586 59812	100nF	10%	50V
2321	4822 124 80791	470µF	20%	16V
2322	4822 124 21913	1µF	20%	63V
2324	4822 124 80791	470µF	20%	16V
2325 ©	4822 122 33753	150pF	5%	50V
2326 ©	4822 122 33753	150pF	5%	50V
2327	4822 124 40207	100µF	20%	25V
2328 ©	5322 126 11583	10nF	10%	63V
2329	4822 124 40769	4,7µF	20%	100V
2330 ©	2238 586 59812	100nF	10%	50V
2331 ©	2238 586 59812	100nF	10%	50V
2336 ©	2238 586 59812	100nF	10%	50V
2338 ©	2238 586 59812	100nF	10%	50V
2339 ©	2238 586 59812	100nF	10%	50V
2340 ©	2238 586 59812	100nF	10%	50V
2341 ©	4822 122 33753	150pF	5%	50V
2342 ©	2238 586 59812	100nF	10%	50V
2343 ©	3198 016 31020	1nF	5%	25V
2344 ©	2238 586 59812	100nF	10%	50V

RESISTORS

3302 ©	4822 051 30332	3,3kΩ	5%	0,06W
3304 ©	4822 051 30222	2,2kΩ	5%	0,06W
3306 ©	4822 051 30103	10kΩ	5%	0,06W
3307 ⚠	4822 052 10229	22Ω	5%	0,33W
3309	4822 116 83872	220Ω	5%	0,5W
3311 ©	4822 051 30479	47Ω	5%	0,06W
3313 ©	4822 051 30479	47Ω	5%	0,06W
3314 ©	4822 117 12925	47kΩ	1%	0,06W
3315	4822 116 83872	220Ω	5%	0,5W
3316 ©	4822 051 30102	1kΩ	5%	0,06W
3317 ©	4822 051 30102	1kΩ	5%	0,06W
3318	4822 116 83872	220Ω	5%	0,5W
3319 ©	4822 117 12925	47kΩ	1%	0,06W
3330	4822 116 52195	47Ω	5%	0,5W
3331 ©	4822 051 30103	10kΩ	5%	0,06W
3334 ©	4822 051 30102	1kΩ	5%	0,06W
3335 ©	4822 051 30101	100Ω	5%	0,06W
3337 ©	4822 051 30101	100Ω	5%	0,06W
3338 ©	4822 117 13632	100kΩ	1%	0,06W
3339 ©	4822 051 30222	2,2kΩ	5%	0,06W
3340 ©	4822 051 30471	470Ω	5%	0,06W
3342	4822 116 52195	47Ω	5%	0,5W
3343 ©	4822 051 30561	560Ω	5%	0,06W
3344 ©	4822 117 12903	1,8kΩ	1%	0,06W
3345 ©	4822 051 30561	560Ω	5%	0,06W

RESISTORS

3347 ©	4822 051 30561	560Ω	5%	0,06W
3346 ©	4822 051 30102	1kΩ	5%	0,06W
3348 ©	4822 117 12925	47kΩ	1%	0,06W
3349 ©	4822 117 12925	47kΩ	1%	0,06W
3354 ©	4822 051 30181	180Ω	5%	0,06W
3355 ©	2120 108 91909	39Ω	5%	
3391	4822 117 12063	10kΩ NTC		
4301 ©	4822 051 30008	CHIP JUMPER 0603		
4302 ©	4822 051 30008	CHIP JUMPER 0603		
4303 ©	4822 051 30008	CHIP JUMPER 0603		
4307 ©	4822 051 30008	CHIP JUMPER 0603		

COILS

5300	2422 536 00019	TRANSFORMER, DIGITAL OUT

TRANSISTORS

7321	4822 130 44568	BC557B
7323 ©	5322 130 60159	BC846B

INTEGRATED CIRCUITS

7313	4822 130 10845	LED (OPTICAL OUT)
7320 ©	4822 209 30095	LM833D, 2-FOLD OP-AMP.
7324 ©	4822 209 17235	74LVU04D, 6-FOLD INVERTER

ELECTRICAL PARTSLIST *CD LOADER*

MISCELLANEOUS

1800	2422 025 12133	FFC-CONNECTOR, 16P, SIDE ENTRY
1802	2422 025 16833	FFC-CONNECTOR, 8P, SIDE ENTRY
1805	4822 265 11531	FFC-CONNECTOR, 9P, SIDE ENTRY
1832	2422 129 16655	LEAF SWITCH 1P
8000	3103 308 92850	FLEXFOIL CABLE, 16P, 100mm BD

CAPACITORS

2800	4822 124 22726	4,7µF	20%	35V
2801 ©	4822 126 14241	330pF	5%	50V
2802 ©	4822 126 14241	330pF	5%	50V
2803 ©	4822 126 14315	390pF	5%	50V
2804 ©	4822 126 14315	390pF	5%	50V
2805 ©	4822 126 14315	390pF	5%	50V
2806 ©	4822 126 14315	390pF	5%	50V
2807 ©	4822 126 13883	220pF	5%	50V
2808 ©	4822 126 13883	220pF	5%	50V
2809 ©	4822 126 13883	220pF	5%	50V
2810 ©	4822 126 13883	220pF	5%	50V
2811 ©	4822 126 13883	220pF	5%	50V
2812 ©	4822 126 13883	220pF	5%	50V
2813 ©	4822 126 13879	220nF	20%	16V
2814 ©	4822 126 13193	4,7nF	10%	63V
2815	4822 124 22726	4,7µF	20%	35V
2816 ©	3198 024 44730	47nF	5%	50V
2817	4822 124 22726	4,7µF	20%	35V
2819	4822 124 22726	4,7µF	20%	35V
2820 ©	3198 024 44730	47nF	5%	50V
2821 ©	3198 016 38210	820pF	10%	25V
2822 ©	5322 126 11579	3,3nF	10%	63V
2824 ©	3198 024 44730	47nF	5%	50V
2825 ©	4822 126 13956	68pF	5%	63V
2828 ©	4822 126 11663	12pF	5%	50V
2829 ©	4822 126 14043	1µF	20%	16V
2831 ©	4822 126 11669	27pF	10%	50V
2832 ©	4822 126 14238	2,2nF	10%	50V
2833 ©	4822 126 14247	1,5nF	10%	50V
2835	4822 124 12362	47µF	20%	4V
2836	4822 124 12362	47µF	20%	4V
2837 ©	4822 126 11669	27pF	10%	50V
2838 ©	5322 126 11578	1nF	10%	63V
2839 ©	2238 916 11552	1,5nF	5%	25V
2840	5322 124 41948	0,47µF	20%	50V
2842 ©	2238 916 11552	1,5nF	5%	25V
2843 ©	4822 126 14305	100nF	10%	16V
2844 ©	2222 867 15339	33pF	5%	50V
2845 ©	2222 867 15339	33pF	5%	50V
2846 ©	3198 016 31020	1nF	5%	25V
2847 ©	3198 016 31020	1nF	5%	25V
2848 ©	3198 016 31020	1nF	5%	25V
2849 ©	3198 016 31020	1nF	5%	25V
2851 ©	3198 024 44730	47nF	5%	50V
2852 ©	3198 024 44730	47nF	5%	50V
2853 ©	4822 126 14305	100nF	10%	16V
2854 ©	3198 024 44730	47nF	5%	50V
2856 ©	4822 126 13879	220nF	20%	16V
2857	4822 124 80144	220µF	20%	25V
2858 ©	4822 126 14305	100nF	10%	16V
2864	4822 124 81286	47µF	20%	16V
2868 ©	3198 024 44730	47nF	5%	50V
2876 ©	3198 024 44730	47nF	5%	50V
2877 ©	4822 126 14305	100nF	10%	16V
2878 ©	4822 126 14305	100nF	10%	16V
2880 ©	4822 122 31765	100pF	5%	50V
2883 ©	4822 126 14043	1µF	20%	16V
2884 ©	4822 126 14043	1µF	20%	16V

RESISTORS

2823 ©	4822 051 30008	CHIP JUMPER 0603		
3800 ©	4822 051 20159	15Ω	5%	0,1W
3801 ©	4822 051 20159	15Ω	5%	0,1W
3802 ©	4822 051 30332	3,3kΩ	5%	0,06W
3803 ©	4822 051 30332	3,3kΩ	5%	0,06W
3804 ©	4822 051 30332	3,3kΩ	5%	0,06W
3805 ©	4822 051 30332	3,3kΩ	5%	0,06W
3806 ©	4822 051 30223	22kΩ	5%	0,06W
3807 ©	4822 051 30223	22kΩ	5%	0,06W
3808 ©	4822 051 30153	15kΩ	5%	0,06W
3809 ©	4822 051 30153	15kΩ	5%	0,06W
3810 ©	4822 051 30153	15kΩ	5%	0,06W
3811 ©	4822 051 30153	15kΩ	5%	0,06W
3814 ©	4822 051 30103	10kΩ	5%	0,06W
3815 ©	4822 051 30103	10kΩ	5%	0,06W
3816 ©	4822 051 30103	10kΩ	5%	0,06W
3817 ©	4822 051 30103	10kΩ	5%	0,06W
3818 ©	4822 051 30103	10kΩ	5%	0,06W
3819 ©	4822 051 30103	10kΩ	5%	0,06W
3820 ⚠	4822 052 10478	4,7Ω	5%	NFR25
3821 ©	4822 117 13608	4,7Ω	5%	0,06W
3822 ©	4822 051 30223	22kΩ	5%	0,06W
3823 ©	4822 051 30683	68kΩ	5%	0,06W
3824 ©	4822 051 30472	4,7kΩ	5%	0,06W
3825 ©	4822 051 30102	1kΩ	5%	0,06W
3826 ©	4822 051 10102	1kΩ	2%	0,25W
3827 ©	4822 051 30103	10kΩ	5%	0,06W
3828 ©	4822 117 11373	100Ω	1%	0,1W
3829 ©	4822 051 30471	470Ω	5%	0,06W
3831 ©	4822 051 30101	100Ω	5%	0,06W
3832 ©	4822 051 30273	27kΩ	5%	0,06W
3833 ©	4822 117 12925	47kΩ	1%	0,06W
3834 ©	4822 051 30008	CHIP JUMPER 0603		
3835 ©	4822 051 30223	22kΩ	5%	0,06W
3836 ©	4822 117 13632	100kΩ	1%	0,06W
3839 ©	4822 051 30223	22kΩ	5%	0,06W
3840 ©	4822 051 30152	1,5kΩ	5%	0,06W
3841 ©	4822 117 11817	1,2kΩ	1%	0,06W
3842 ©	4822 051 30102	1kΩ	5%	0,06W
3843 ©	4822 051 30223	22kΩ	5%	0,06W
3844 ©	4822 051 30331	330Ω	5%	0,06W
3845 ©	4822 051 30392	3,9kΩ	5%	0,06W
3846 ©	4822 051 30472	4,7kΩ	5%	0,06W
3848 ©	4822 051 30102	1kΩ	5%	0,06W
3849 ©	4822 051 30334	330kΩ	5%	0,06W
3850 ©	4822 051 30334	330kΩ	5%	0,06W
3856 ©	4822 051 30223	22kΩ	5%	0,06W
3857 ©	4822 051 20159	15Ω	5%	0,1W
3858 ©	4822 051 20339	33Ω	5%	0,1W
3862 ©	4822 051 30103	10kΩ	5%	0,06W
3863 ©	4822 051 30471	470Ω	5%	0,06W
3864 ©	4822 051 30471	470Ω	5%	0,06W
3865 ©	4822 051 30471	470Ω	5%	0,06W
3866 ©	4822 051 30471	470Ω	5%	0,06W
3867 ©	4822 051 30471	470Ω	5%	0,06W
3868 ©	4822 051 30103	10kΩ	5%	0,06W
3869 ©	4822 051 30103	10kΩ	5%	0,06W
3871 ©	4822 051 30103	10kΩ	5%	0,06W
3873 ©	4822 051 30103	10kΩ	5%	0,06W
3877 ©	4822 051 30121	120Ω	5%	0,06W
3878 ©	4822 051 20121	120Ω	5%	0,1W
3879 ©	4822 051 30183	18kΩ	5%	0,06W
3880 ©	4822 051 30103	10kΩ	5%	0,06W
3881 ©	4822 051 30103	10kΩ	5%	0,06W
3882 ©	4822 051 30223	22kΩ	5%	0,06W

ELECTRICAL PARTSLIST *CD LOADER*

RESISTORS

3883 ©	4822 051 30103	10kΩ	5%	0,06W
3884 ©	4822 051 30102	1kΩ	5%	0,06W
3885 ©	4822 051 30102	1kΩ	5%	0,06W
3886 ©	4822 051 30102	1kΩ	5%	0,06W
3887 ©	4822 117 12864	82kΩ	5%	0,06W
3889 ©	4822 051 30273	27kΩ	5%	0,06W
3890 ©	4822 117 12902	8,2kΩ	1%	0,06W
3891 ©	4822 117 13632	100kΩ	1%	0,06W
3892 ©	4822 051 30153	15kΩ	5%	0,06W
3894 ©	4822 117 12864	82kΩ	5%	0,06W
3895 ©	4822 051 30273	27kΩ	5%	0,06W
3896 ©	4822 117 12902	8,2kΩ	1%	0,06W
3907 ©	4822 051 30471	470Ω	5%	0,06W
3908 ©	4822 051 30101	100Ω	5%	0,06W
3910 ©	2322 704 65603	56kΩ	1%	0,06W
3911 ©	2322 704 65603	56kΩ	1%	0,06W
3912 ©	2322 704 65603	56kΩ	1%	0,06W
3913 ©	2322 704 65603	56kΩ	1%	0,06W
3914 ©	4822 117 11503	220Ω	5%	0,1W
3915 ©	4822 117 11503	220Ω	5%	0,1W
3923 ©	4822 117 11373	100Ω	1%	0,1W
3924 ©	4822 051 20339	33Ω	5%	0,1W
3944 ©	4822 051 20229	22Ω	5%	0,1W
3953 ©	4822 051 30103	10kΩ	5%	0,06W
3954 ©	4822 051 30103	10kΩ	5%	0,06W
3955 ©	4822 051 30103	10kΩ	5%	0,06W
3963 ©	4822 051 20229	22Ω	5%	0,1W
3964 ©	4822 051 20008	CHIP JUMPER 0805		
3965 ©	4822 051 20008	CHIP JUMPER 0805		
3980 ©	4822 051 30153	15kΩ	5%	0,06W
3981 ©	4822 051 30103	10kΩ	5%	0,06W
3982 ©	4822 051 30479	47Ω	5%	0,06W
3983 ©	4822 051 30479	47Ω	5%	0,06W
4804 ©	4822 051 20008	CHIP JUMPER 0805		
4806 ©	4822 051 20008	CHIP JUMPER 0805		
4815 ©	4822 051 20008	CHIP JUMPER 0805		
4816 ©	4822 051 20008	CHIP JUMPER 0805		
4818 ©	4822 051 20008	CHIP JUMPER 0805		
4819 ©	4822 051 20008	CHIP JUMPER 0805		
4820 ©	4822 051 20008	CHIP JUMPER 0805		
4821 ©	4822 051 20008	CHIP JUMPER 0805		
4822 ©	4822 051 20008	CHIP JUMPER 0805		
4823 ©	4822 051 20008	CHIP JUMPER 0805		
4824 ©	4822 051 20008	CHIP JUMPER 0805		
4825 ©	4822 051 20008	CHIP JUMPER 0805		
4826 ©	4822 051 20008	CHIP JUMPER 0805		
4827 ©	4822 051 20008	CHIP JUMPER 0805		
4829 ©	4822 051 20008	CHIP JUMPER 0805		
4830 ©	4822 051 20008	CHIP JUMPER 0805		
4831 ©	4822 051 20008	CHIP JUMPER 0805		
4832 ©	4822 051 20008	CHIP JUMPER 0805		
4833 ©	4822 051 20008	CHIP JUMPER 0805		
4834 ©	4822 051 20008	CHIP JUMPER 0805		
4836 ©	4822 051 20008	CHIP JUMPER 0805		
4837 ©	4822 051 20008	CHIP JUMPER 0805		
4838 ©	4822 051 20008	CHIP JUMPER 0805		
4839 ©	4822 051 20008	CHIP JUMPER 0805		
4842 ©	4822 051 20008	CHIP JUMPER 0805		
4843 ©	4822 051 20008	CHIP JUMPER 0805		
4844 ©	4822 051 20008	CHIP JUMPER 0805		
4845 ©	4822 051 20008	CHIP JUMPER 0805		
4846 ©	4822 051 20008	CHIP JUMPER 0805		
4847 ©	4822 051 20008	CHIP JUMPER 0805		
4848 ©	4822 051 20008	CHIP JUMPER 0805		
4849 ©	4822 051 20008	CHIP JUMPER 0805		
4850 ©	4822 051 20008	CHIP JUMPER 0805		
4851 ©	4822 051 20008	CHIP JUMPER 0805		
4852 ©	4822 051 20008	CHIP JUMPER 0805		
4854 ©	4822 051 20008	CHIP JUMPER 0805		
4855 ©	4822 051 20008	CHIP JUMPER 0805		
4856 ©	4822 051 20008	CHIP JUMPER 0805		
4857 ©	4822 051 20008	CHIP JUMPER 0805		
4858 ©	4822 051 20008	CHIP JUMPER 0805		
4861 ©	4822 051 20008	CHIP JUMPER 0805		
4862 ©	4822 051 20008	CHIP JUMPER 0805		
4864 ©	4822 051 20008	CHIP JUMPER 0805		
4865 ©	4822 051 20008	CHIP JUMPER 0805		
4866 ©	4822 051 20008	CHIP JUMPER 0805		
4867 ©	4822 051 20008	CHIP JUMPER 0805		
4868 ©	4822 051 20008	CHIP JUMPER 0805		
4869 ©	4822 051 20008	CHIP JUMPER 0805		
4871 ©	4822 051 20008	CHIP JUMPER 0805		

COILS

1810	2422 543 01068	RESONATOR 8MHZ

DIODES

6802 ©	9322 129 34685	BZX284-C3V9
6804 ©	9340 548 52115	BZX284-C5V1

TRANSISTORS

7800 ©	4822 130 60511	BC847B
7802 ©	4822 130 60511	BC847B
7803 ©	4822 130 60511	BC847B
7804 ©	5322 130 42718	BFS20
7805 ©	5322 130 42756	BC857C
7806 ©	4822 130 60511	BC847B
7807 ©	5322 130 42755	BC847C
7816 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7801 ©	4822 209 17286	TZA1024T/N1, HF-Amplifier
7811 ©	9352 684 20557	SAA7325H/T/M2B, Signal Processor
7815	4822 209 62059	TCA0372DP1, 2-FOLD OP-AMP.
7819 ©	9322 158 56682	M63000SP, Motor driver
7820	4822 209 72554	MC7808CT 8V Regulator